MINES

ENTENTE DE DÉVELOPPEMENT ÉCONOMIQUE ET RÉGIONAL

Canada

Manitoba

MG-13097A

CONTRACT SERIAL NO. 69198-01-SQ
CONTRACTOR: HUDSON BAY MINING
DSS REQUISITION NO. 23440-6-9198

THE MINERAL CHARACTERISTICS THAT AFFECT METAL RECOVERIES FROM THE Cu, Zn, Pb AND Ag ORES FROM MANITOBA.

PART 3 : VOLUME 2.

A MINERALOGICAL EVALUATION OF THE BEHAVIOUR OF METALLIC MINERALS IN THE HBMS CONCENTRATOR CIRCUIT.

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MICROMEDIA

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VOLUME OF IMAGE ANALYSIS PLOTS AND DATA TABLES.

The data presented in this volume constitutes the raw (non-material balanced) image analysis data generated for each of the 20 mill product samples. The data presented here were generated using a modified version of the Major Mineral Routine (PRGM #977), namely PRGM #971. These data were incorporated into the computations of the condensed data for the 17 mill products, upon which all the material balance calculations were performed. The grain size distributions of free galena grains are not given separately here, but can be extracted from the corresponding classifications in Appendix D.

The term MINERAL OF INTEREST is used here to describe the mineral upon which a specific analysis or procedure is being performed, and has no economic conotation. The term ALL MINERALS in the figure annotations, and the term ALL OTHER MINERALS in the table captions are used to describe all minerals other than the mineral of interest in that specific case. The grain size distributions of ALL MINERALS combined are nominally equivalent to screen size analysis i.e. particle size analysis.

Appendix A

PLOTS OF GRAIN SIZE DISTRIBUTIONS FOR ALL MINERALS COMBINED, AND FOR FREE CHALCOPYRITE AND SPHALERITE

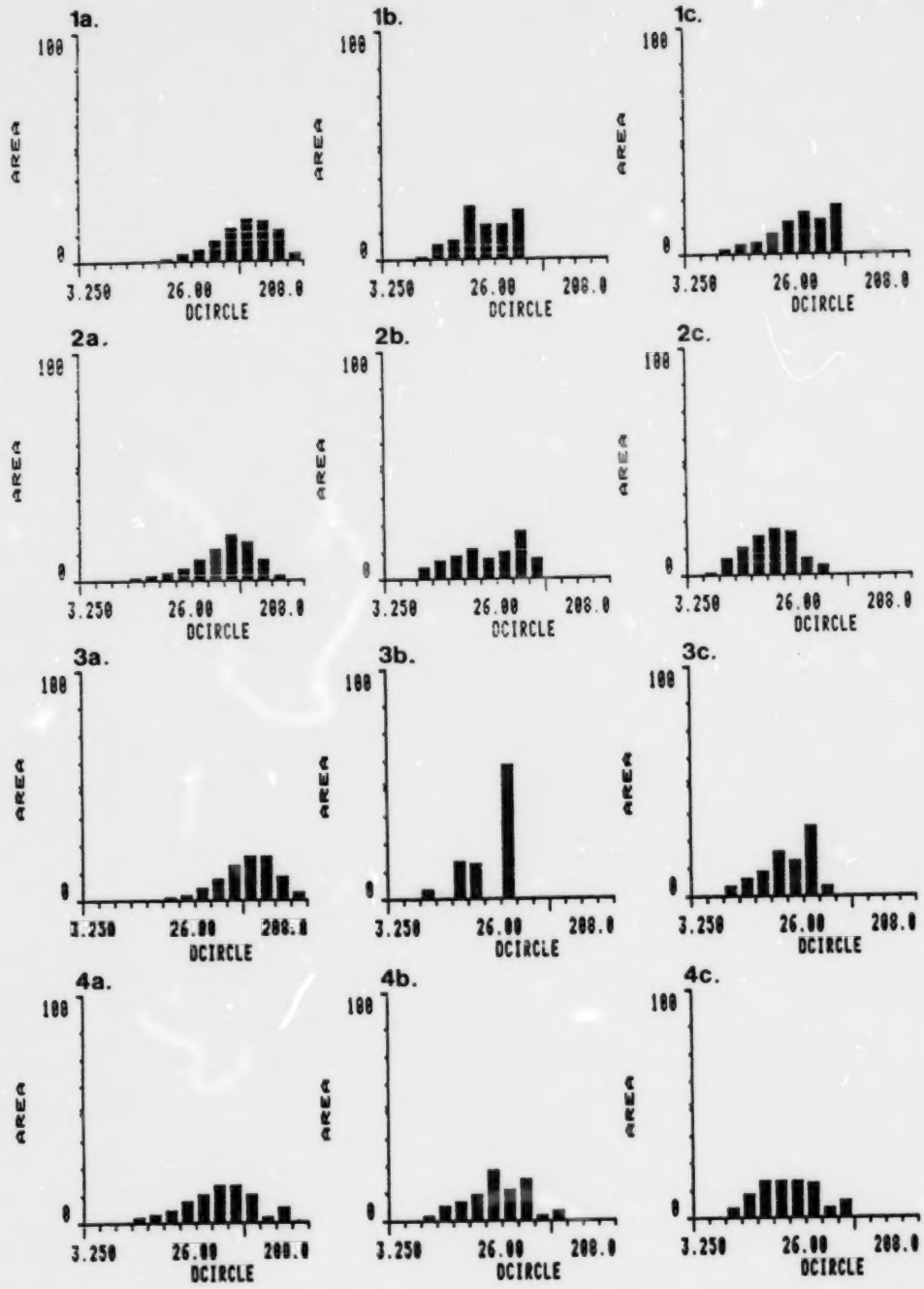

FIGURE 1.
Histograms giving the grain size distributions of liberated (a) ALL MINERALS, (b) CHALCOPYRITE, and (c) SPHALERITE in samples (1) HB.MP-1, (2) HB.MP-2, (3) HB.MP-3, and (4) HB.MP-4.

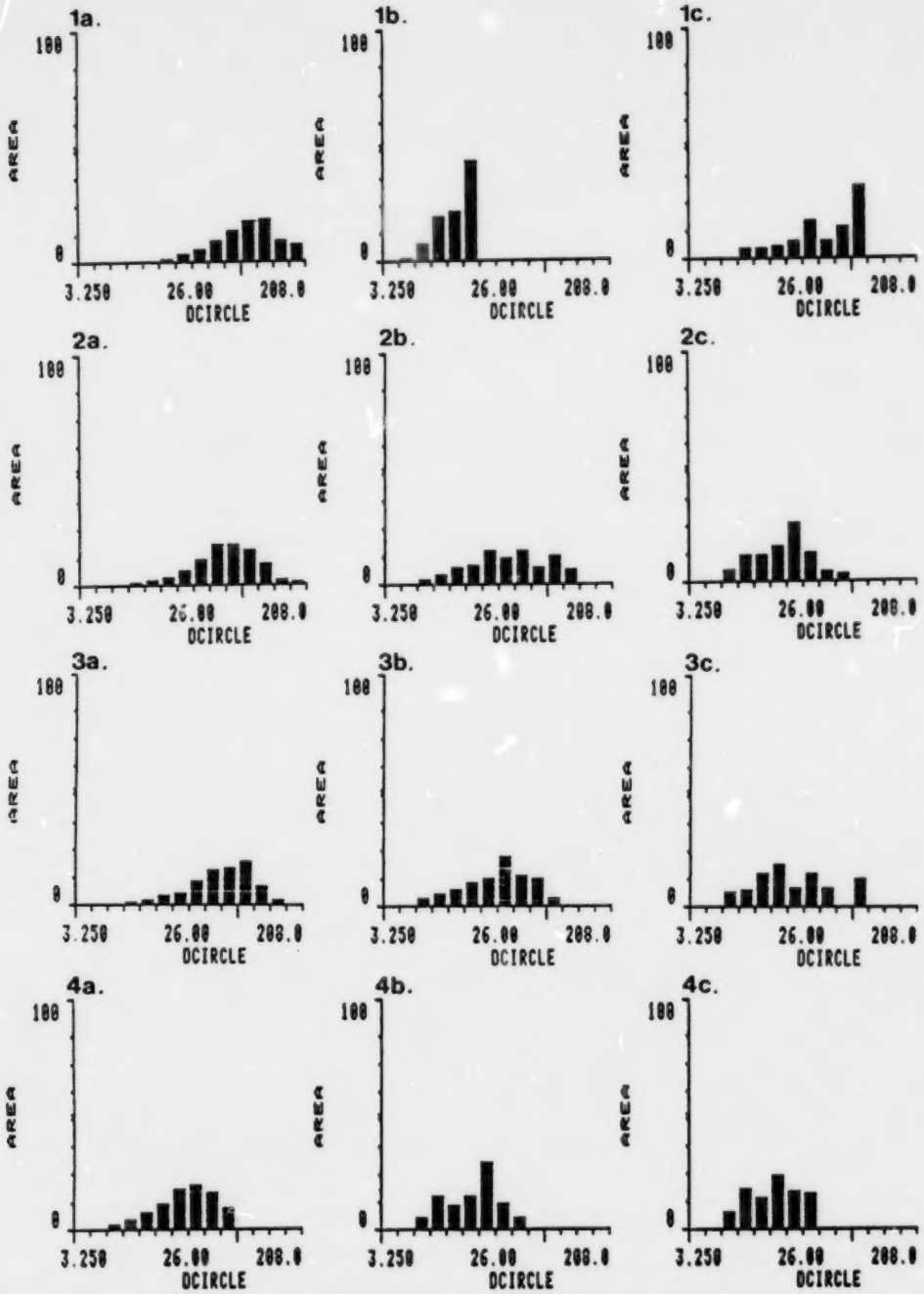

FIGURE 2.
Histograms giving the grain size distributions of liberated (a) ALL MINERALS, (b) CHALCOPYRITE, and (c) SPHALERITE in samples (1) HB.MP-5, (2) HB.MP-6, (3) HB.MP-7, and (4) HB.MP-8.

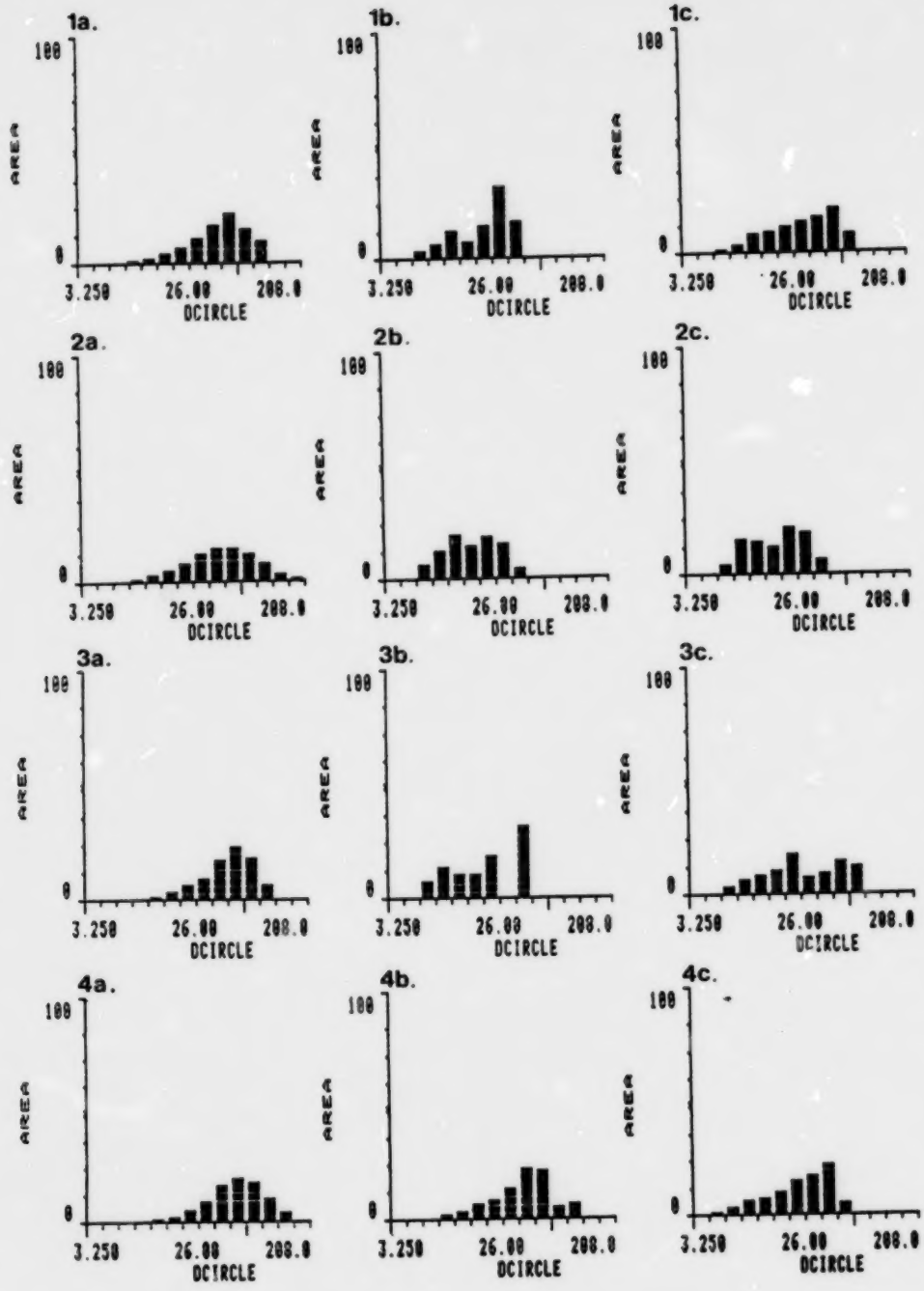

FIGURE 3.
Histograms giving the grain size distributions of liberated (a) ALL MINERALS, (b) CHALCOPYRITE, and (c) SPHALERITE in samples (1) HB.MP-9, (2) HB.MP-10, (3) HB.MP-11, and (4) HB.MP-12.

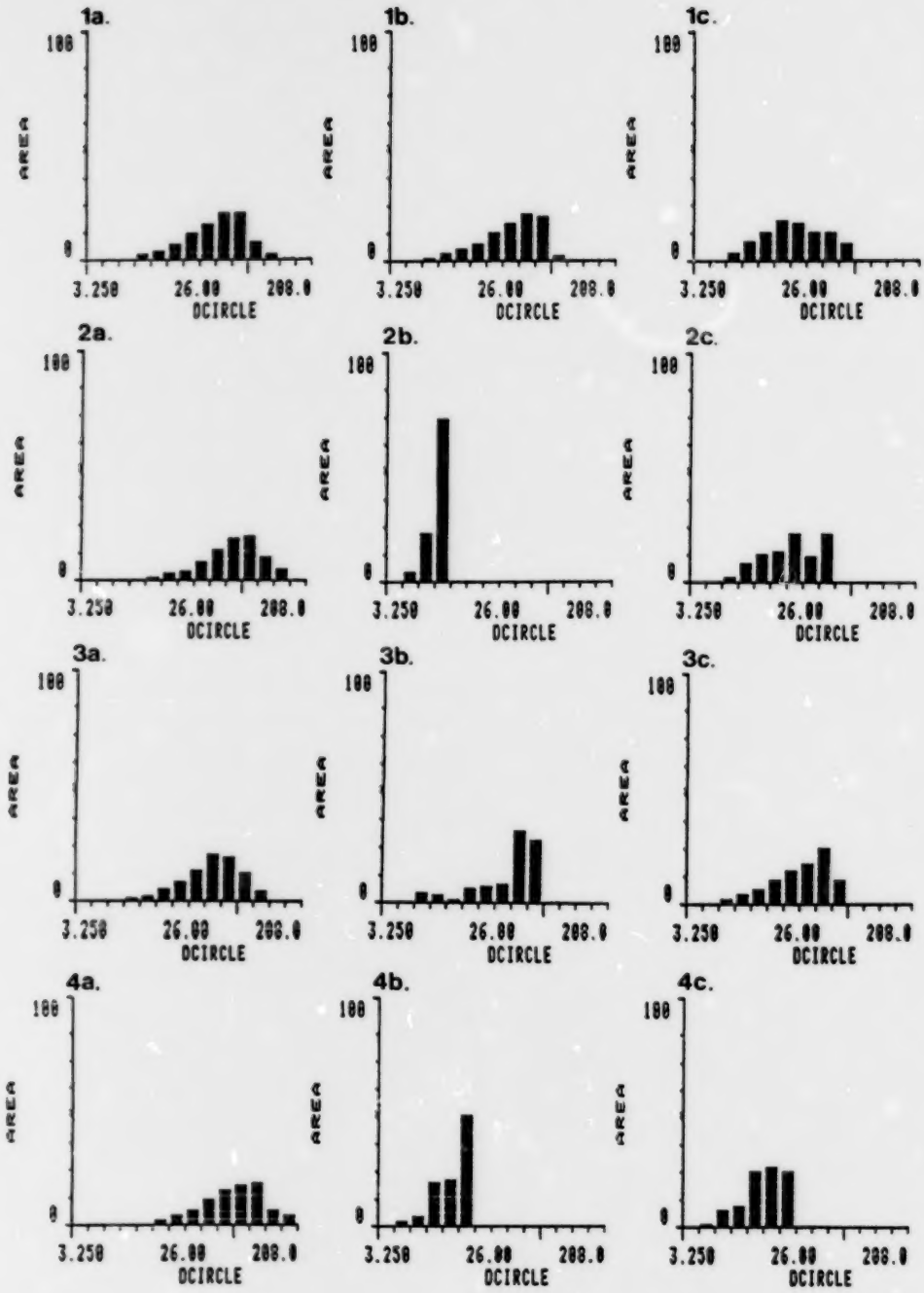

FIGURE 4.
Histograms giving the grain size distributions of liberated (a) ALL MINERALS, (b) CHALCOPYRITE, and (c) SPHALERITE in samples (1) HB.MP-14, (2) HB.MP-15, (3) HB.MP-16, and (4) HB.MP-17.

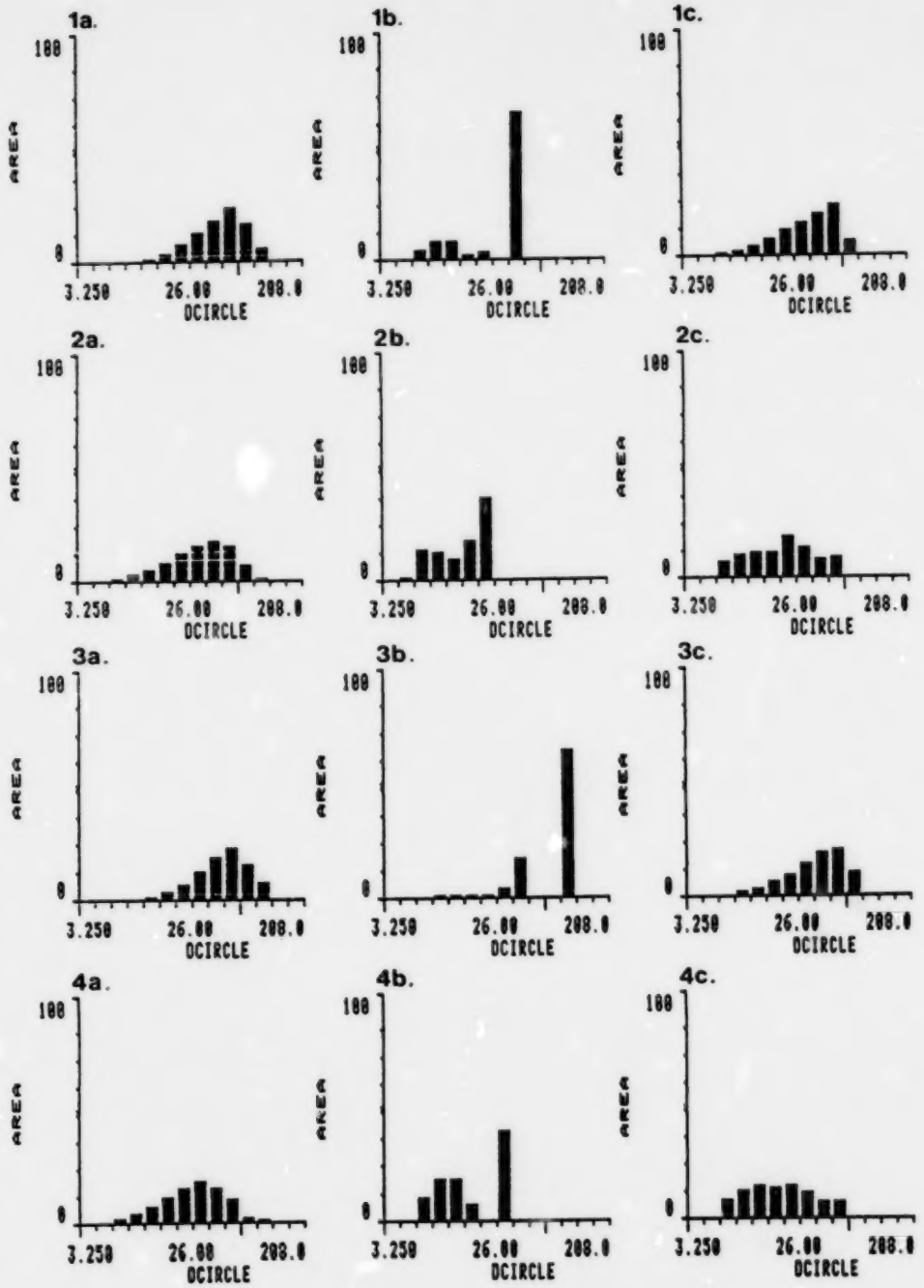

FIGURE 5.
Histograms giving the grain size distributions of liberated (a) ALL MINERALS, (b) CHALCOPYRITE, and (c) SPHALERITE in samples (1) HB.MP-18, (2) HB.MP-19, (3) HB.MP-20, and (4) HB.MP-21.

Appendix B

TABLES OF GRAIN SIZE DISTRIBUTIONS FOR ALL MINERALS COMBINED, AND FOR FREE CHALCOPYRITE AND SPHALERITE.

TABLE 1.

THE RAW GRAIN SIZE DISTRIBUTION OF ALL MINERALS (PARTICLES).

	Sample.	Classes (um).												
		-3.25	-4.60	-6.50	-9.19	-13.0	-18.4	-26.0	-36.8	-52.0	-73.5	-104.	-147.	-208.	+208.
1	Float Feed.	0.04	0.14	0.83	1.33	2.00	2.85	4.23	6.26	10.7	15.1	19.2	18.6	14.7	4.03
2	Cu Roug Co.	0.04	0.26	1.48	2.18	3.33	4.61	6.94	10.8	15.7	21.1	18.2	10.2	3.37	1.60
3	Cu Roug Tl.	0.04	0.18	0.80	1.24	1.78	2.48	3.98	6.13	10.5	16.2	20.2	20.2	11.9	4.36
4	Cu Roug Co.	0.06	0.23	1.84	3.13	4.74	6.75	10.2	13.5	17.1	17.7	13.7	3.61	7.50	0.00
5	Cu Scav Tl.	0.04	0.16	0.78	1.34	1.81	2.79	4.16	6.32	10.0	14.6	18.8	19.7	10.6	8.89
6	Cu Roug Co.	0.03	0.17	1.19	2.13	3.21	4.98	7.45	12.4	18.2	18.4	16.4	10.1	3.06	2.22
7	Cu Cl 1 Fd.	0.04	0.18	1.38	2.14	3.52	5.05	6.61	11.5	16.1	17.4	20.9	9.91	3.75	1.56
8	Cu Scav Co.	0.11	0.59	3.47	5.93	8.44	12.9	18.1	20.1	17.1	10.1	1.52	1.59	0.00	0.00
9	Cu Cl 1 Tl.	0.05	0.19	1.45	2.51	3.95	5.32	7.46	11.9	17.6	22.0	15.1	10.7	1.80	0.00
10	Cu Scav Co.	0.08	0.27	1.68	2.93	4.47	6.09	9.90	14.0	15.9	16.0	13.1	9.41	4.13	2.13
11	Cu Cl 2 Tl.	0.03	0.15	1.16	1.98	2.91	4.39	7.26	10.8	18.5	24.5	19.7	7.14	1.44	0.00
12	Cu Cl 1 Co.	0.03	0.16	0.90	1.56	2.37	3.93	6.34	11.0	17.5	20.6	18.3	11.8	5.62	0.00
14	Cu Cl 2 Co.	0.04	0.24	1.56	3.02	4.93	7.57	12.0	16.4	21.5	21.0	8.50	3.24	0.00	0.00
15	Zn Roug Fd.	0.05	0.25	1.10	1.80	2.59	4.06	5.57	9.68	14.4	19.7	20.6	11.5	6.89	1.84
16	Zn Roug Co.	0.04	0.28	1.56	2.55	3.84	6.01	9.53	14.2	21.2	21.0	13.6	5.42	0.70	0.00
17	Zn Roug Tl.	0.04	0.19	0.81	1.33	1.99	3.23	5.22	7.75	12.0	16.3	18.5	19.6	7.18	5.85
18	Zn Cl 1 Co.	0.02	0.21	1.06	1.79	2.97	4.78	8.07	13.1	18.9	24.9	17.8	6.41	0.00	0.00
19	Zn Cl 1 Tl.	0.08	0.49	2.58	4.14	6.61	9.25	13.8	16.8	18.3	16.6	8.02	2.45	0.89	0.00
20	Zn Cl 2 Co.	0.02	0.16	0.87	1.78	2.72	4.60	7.99	13.8	19.5	23.6	16.1	8.41	0.51	0.00
21	Zn Cl 2 Tl.	0.10	0.56	3.34	5.67	8.59	12.4	16.9	19.7	16.4	11.1	3.20	2.03	0.00	0.00

TABLE 2.

THE RAW GRAIN SIZE DISTRIBUTION OF FREE CHALCOPYITE.

	Sample.	Classes (um). -3.25	-4.60	-6.50	-9.19	-13.0	-18.4	-26.0	-36.8	-52.0	-73.5	-104.	-147.	-208.	Area. (um^2)
1	Float Feed.	0.00	0.11	2.87	7.14	9.69	24.1	16.5	16.9	22.8	0.00	0.00	0.00	0.00	29800.
2	Cu Roug Co.	0.00	1.05	6.44	9.47	11.2	14.7	10.2	13.0	23.0	10.9	0.00	0.00	0.00	79200.
3	Cu Roug Tl.	0.61	1.14	5.87	0.00	17.0	16.3	0.00	59.0	0.00	0.00	0.00	0.00	0.00	1150.
4	Cu Roug Co.	0.01	0.25	3.46	7.87	9.33	12.8	23.4	14.5	19.8	3.24	5.21	0.00	0.00	116000.
5	Cu Scav Tl.	0.00	2.97	8.91	21.0	23.0	44.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	885.
6	Cu Roug Co.	0.00	0.37	3.26	5.16	8.08	9.61	15.3	13.0	15.6	8.13	13.9	7.65	0.00	128000.
7	Cu Cl 1 Fd.	0.00	0.63	4.35	6.40	8.40	11.7	13.3	22.8	14.7	13.3	4.46	0.00	0.00	114000.
8	Cu Scav Co.	0.00	1.02	6.63	15.8	11.6	15.5	30.5	12.8	6.07	0.00	0.00	0.00	0.00	22300.
9	Cu Cl 1 Tl.	0.00	0.60	4.53	7.35	13.4	8.74	15.6	32.0	17.7	0.00	0.00	0.00	0.00	13900.
10	Cu Scav Co.	0.00	0.88	7.04	13.6	20.5	15.6	19.6	16.9	5.86	0.00	0.00	0.00	0.00	29800.
11	Cu Cl 2 Tl.	0.00	1.52	8.55	14.5	12.0	12.0	19.1	0.00	32.4	0.00	0.00	0.00	0.00	14759.
12	Cu Cl 1 Co.	0.00	0.15	1.41	3.02	4.03	7.14	9.72	14.3	23.3	22.8	6.41	7.62	0.00	337000.
14	Cu Cl 2 Co.	0.01	0.22	2.10	4.07	6.49	8.13	13.6	17.1	21.6	20.9	3.90	1.84	0.00	520000.
15	Zn Roug Fd.	0.00	5.20	22.8	72.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	219.
16	Zn Roug Co.	0.00	0.82	5.62	4.29	2.30	7.43	8.59	9.71	32.5	28.7	0.00	0.00	0.00	8170.
17	Zn Roug Tl.	0.00	3.67	5.18	20.1	21.2	49.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	406.
18	Zn Cl 1 Co.	0.19	1.63	5.61	9.02	9.47	3.95	4.04	0.00	66.1	0.00	0.00	0.00	0.00	7510.
19	Zn Cl 1 Tl.	0.66	2.92	15.0	13.6	10.9	19.0	37.9	0.00	0.00	0.00	0.00	0.00	0.00	2250.
20	Zn Cl 2 Co.	0.00	0.11	1.31	2.80	2.13	2.99	2.36	5.05	18.2	0.00	0.00	65.0	0.00	14100.
21	Zn Cl 2 Tl.	0.00	0.94	12.0	19.6	19.2	8.12	0.00	40.2	0.00	0.00	0.00	0.00	0.00	4550.

TABLE 3.

THE RAW GRAIN SIZE DISTRIBUTION OF FREE SPHALERITE.

Sample.	Classes (um). -3.25	-4.60	-6.50	-9.19	-13.0	-18.4	-26.0	-36.8	-52.0	-73.5	-104.	-147.	-208.	Area, (um^2)
1 Float Feed.	0.06	0.42	3.34	5.71	6.46	10.6	15.2	19.6	16.3	22.2	0.00	0.00	0.00	53200.
2 Cu Roug Co.	0.00	2.65	8.69	13.3	18.8	21.3	20.8	8.64	5.81	0.00	0.00	0.00	0.00	22500.
3 Cu Roug Tl.	0.00	0.78	5.24	8.25	11.8	20.6	16.3	31.4	5.51	0.00	0.00	0.00	0.00	20300.
4 Cu Roug Co.	0.02	0.29	5.52	11.3	17.6	17.1	17.5	16.8	5.39	8.42	0.00	0.00	0.00	40800.
5 Cu Scav Tl.	0.02	0.25	1.48	5.11	5.68	6.52	8.30	17.6	8.43	14.3	32.3	0.00	0.00	41600.
6 Cu Roug Co.	0.00	1.13	6.59	12.4	12.3	16.5	26.8	13.9	5.98	4.41	0.00	0.00	0.00	48100.
7 Cu Cl 1 Fd.	0.02	0.89	7.08	8.90	15.3	19.4	9.47	15.7	9.96	0.00	13.3	0.00	0.00	46500.
8 Cu Scav Co.	0.00	1.84	8.02	18.3	14.1	24.5	17.2	16.0	0.00	0.00	0.00	0.00	0.00	13500.
9 Cu Cl 1 Tl.	0.01	0.36	2.35	4.84	9.42	10.0	12.7	14.6	16.1	20.3	9.29	0.00	0.00	81200.
10 Cu Scav Co.	0.00	1.29	5.29	16.1	15.2	13.8	21.5	19.2	7.64	0.00	0.00	0.00	0.00	22500.
11 Cu Cl 2 Tl.	0.03	0.55	4.57	7.75	9.40	11.1	18.6	8.23	10.8	15.3	13.7	0.00	0.00	70500.
12 Cu Cl 1 Co.	0.40	2.38	4.97	7.35	8.73	11.1	16.8	18.3	23.4	6.55	0.00	0.00	0.00	74700.
14 Cu Cl 2 Co.	0.02	0.98	4.92	9.52	13.3	18.3	17.1	13.8	13.2	8.85	0.00	0.00	0.00	89000.
15 Zn Roug Fd.	0.10	1.04	3.20	9.82	13.4	14.4	22.5	12.7	22.9	0.00	0.00	0.00	0.00	14500.
16 Zn Roug Co.	0.02	0.63	3.23	5.84	7.43	11.4	15.2	18.6	25.3	11.4	1.02	0.00	0.00	470000.
17 Zn Roug Tl.	0.17	2.95	8.03	10.6	25.1	27.9	25.2	0.00	0.00	0.00	0.00	0.00	0.00	4040.
18 Zn Cl 1 Co.	0.01	0.43	2.07	3.99	5.97	8.22	12.4	16.0	19.9	23.5	7.59	0.00	0.00	840000.
19 Zn Cl 1 Tl.	0.03	1.94	8.01	11.3	12.1	13.0	19.2	14.2	9.83	10.4	0.00	0.00	0.00	73300.
20 Zn Cl 2 Co.	0.01	0.26	1.47	3.12	4.55	7.25	10.4	16.0	20.3	22.0	11.5	1.91	1.23	1530000.
21 Zn Cl 2 Tl.	0.02	1.64	9.00	13.7	15.7	14.3	15.7	13.0	8.45	8.47	0.00	0.00	0.00	207000.

Appendix C

PLOTS OF GRAIN SIZE DISTRIBUTIONS AND CLASSIFICATIONS OF UNLIBERATED CHALCOPYRITE AND SPHALERITE.

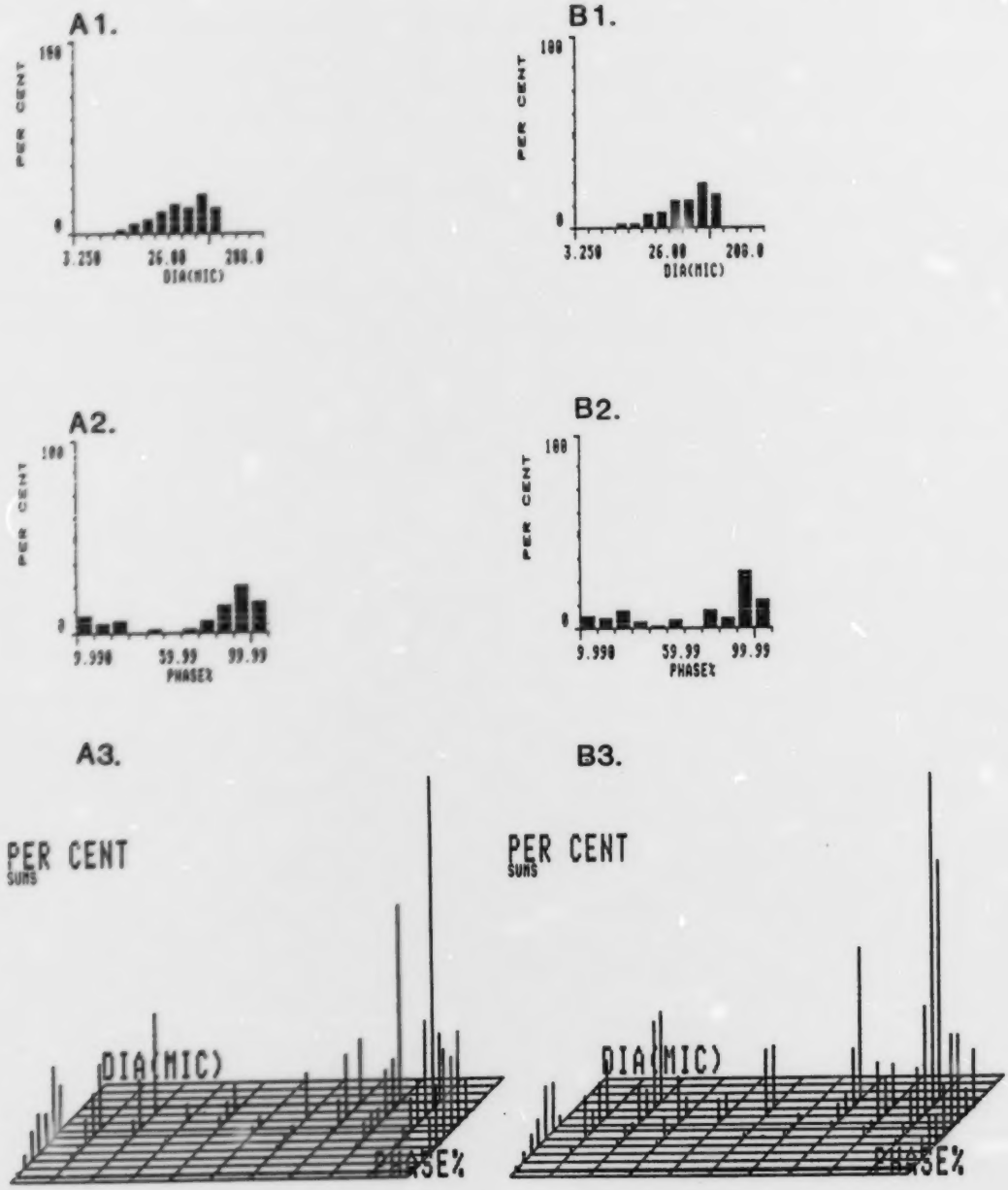

FIGURE 6.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-1. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

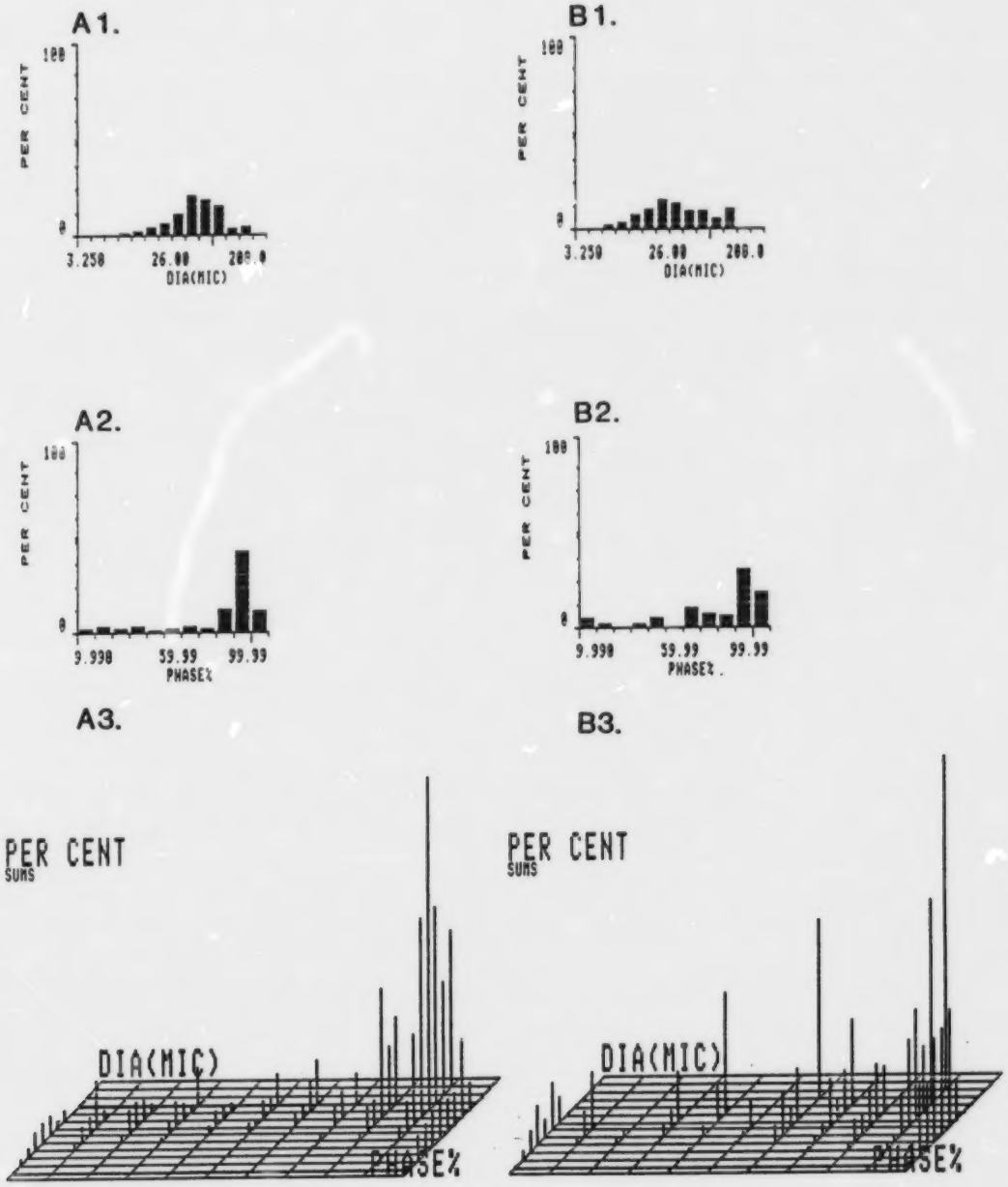

FIGURE 7.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-2. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

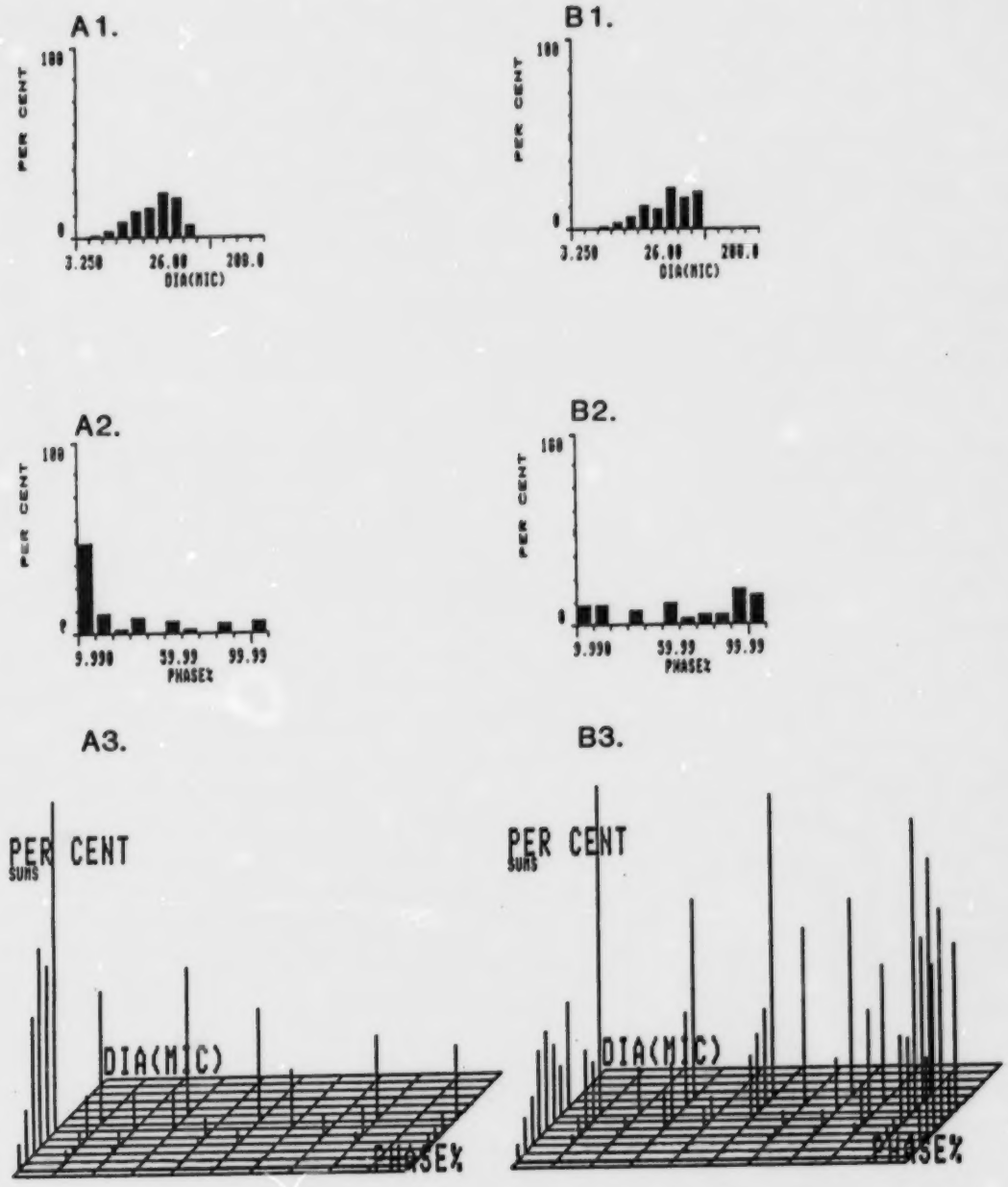

FIGURE 8.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-3. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

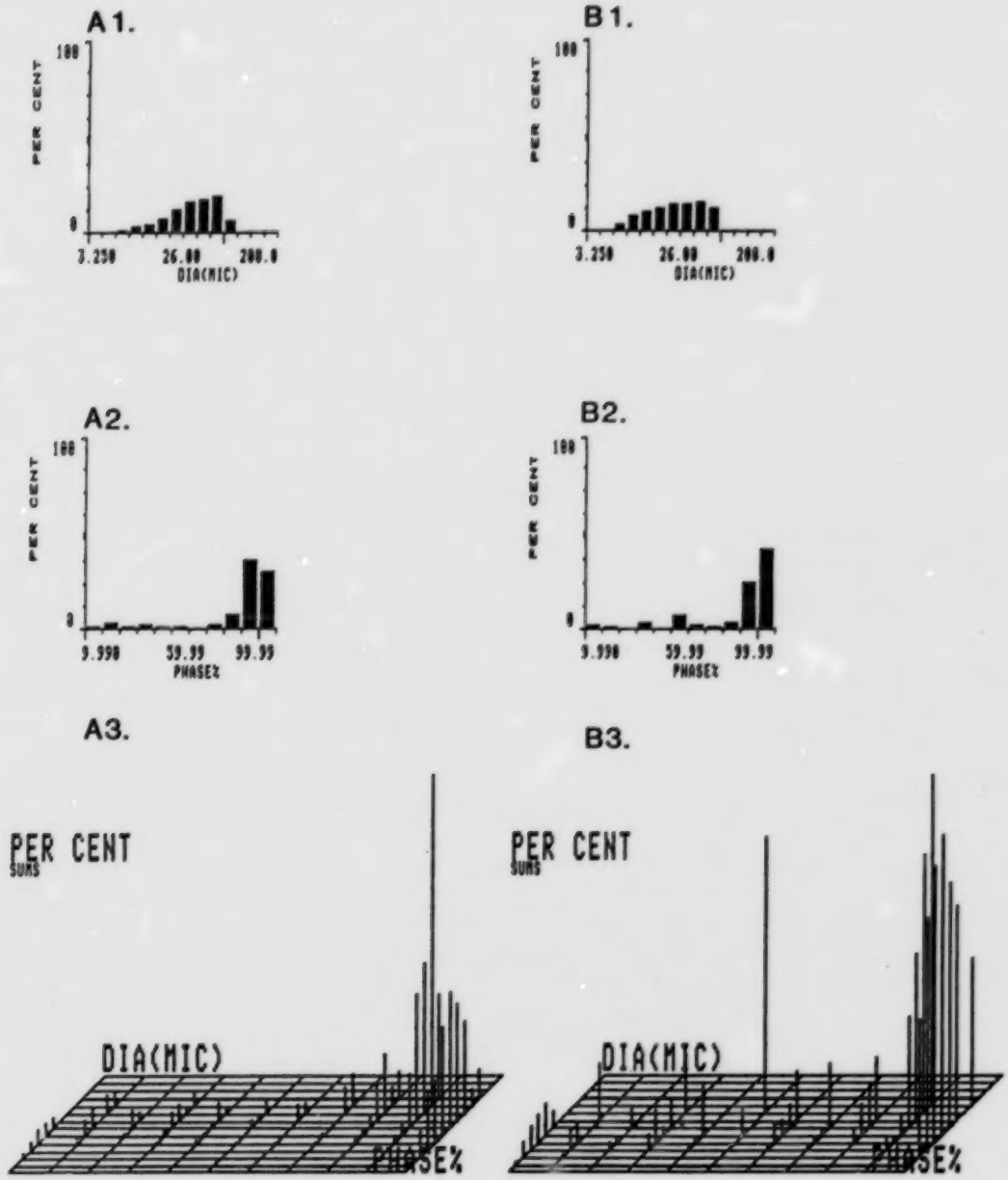

FIGURE 9.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-4. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

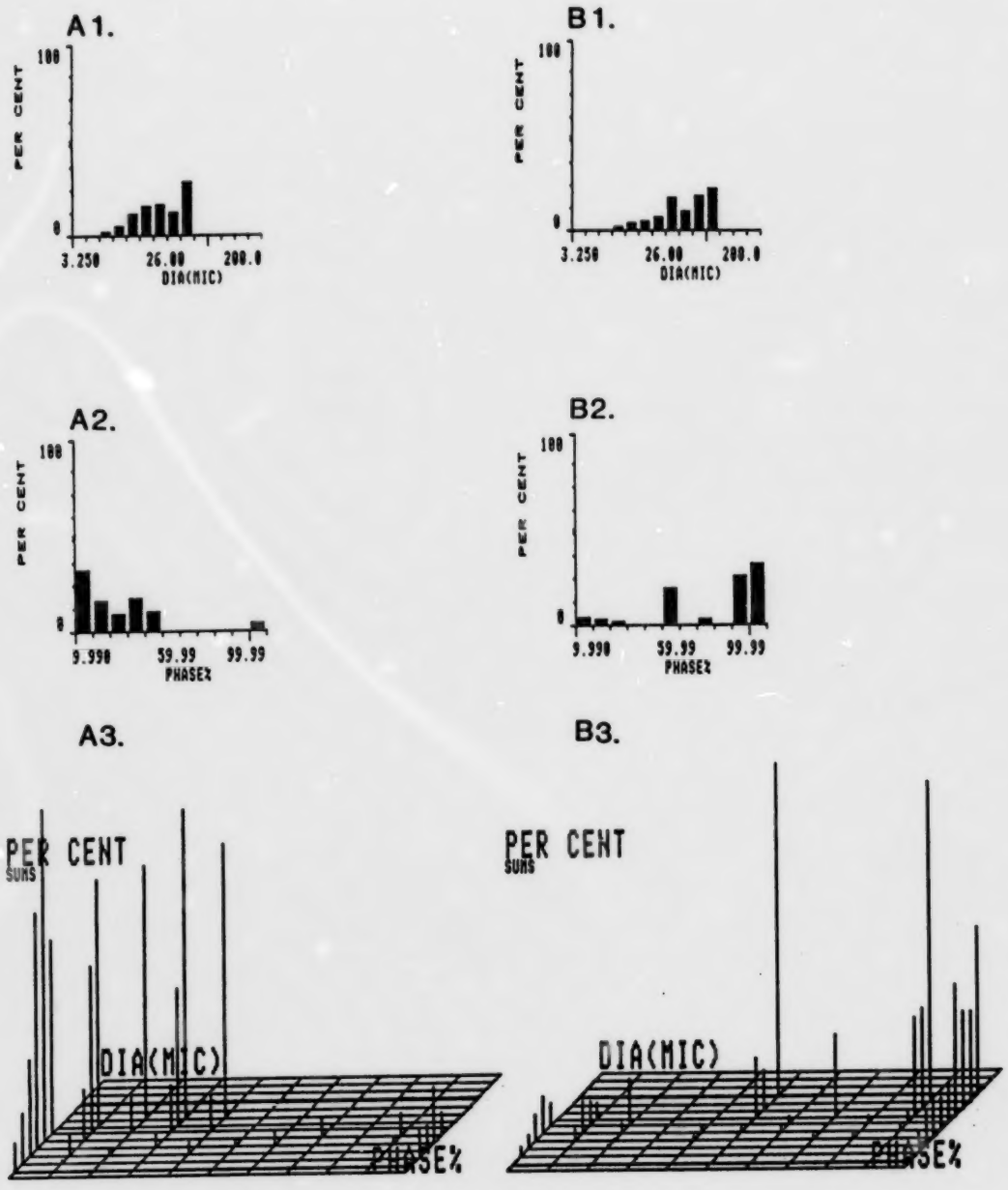

FIGURE 10.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-5. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

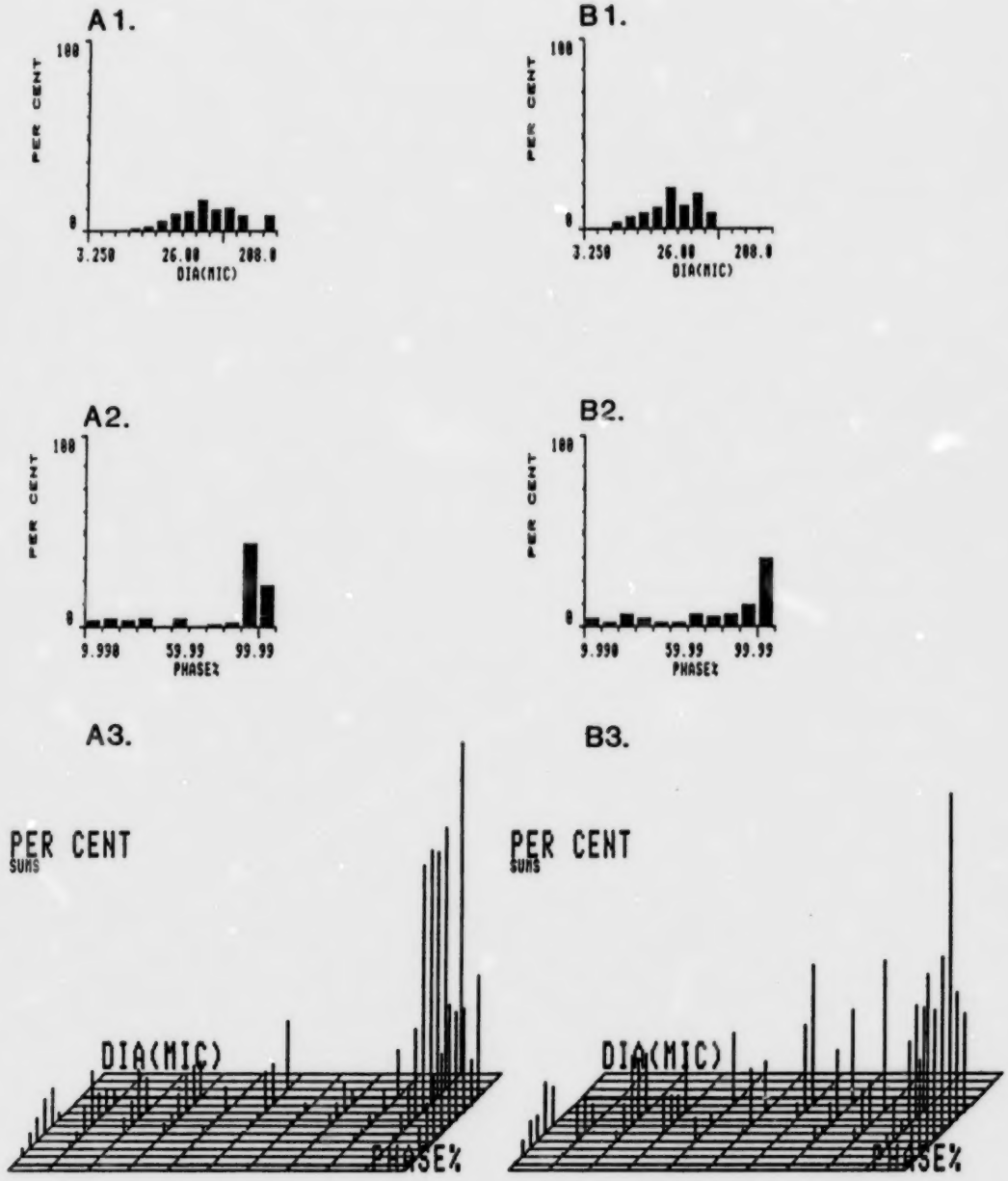

FIGURE 11.
Histograms giving (1) the size distribution, and (2) the classification of the (A) CHALCOPYRITE AND (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-6. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of the diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

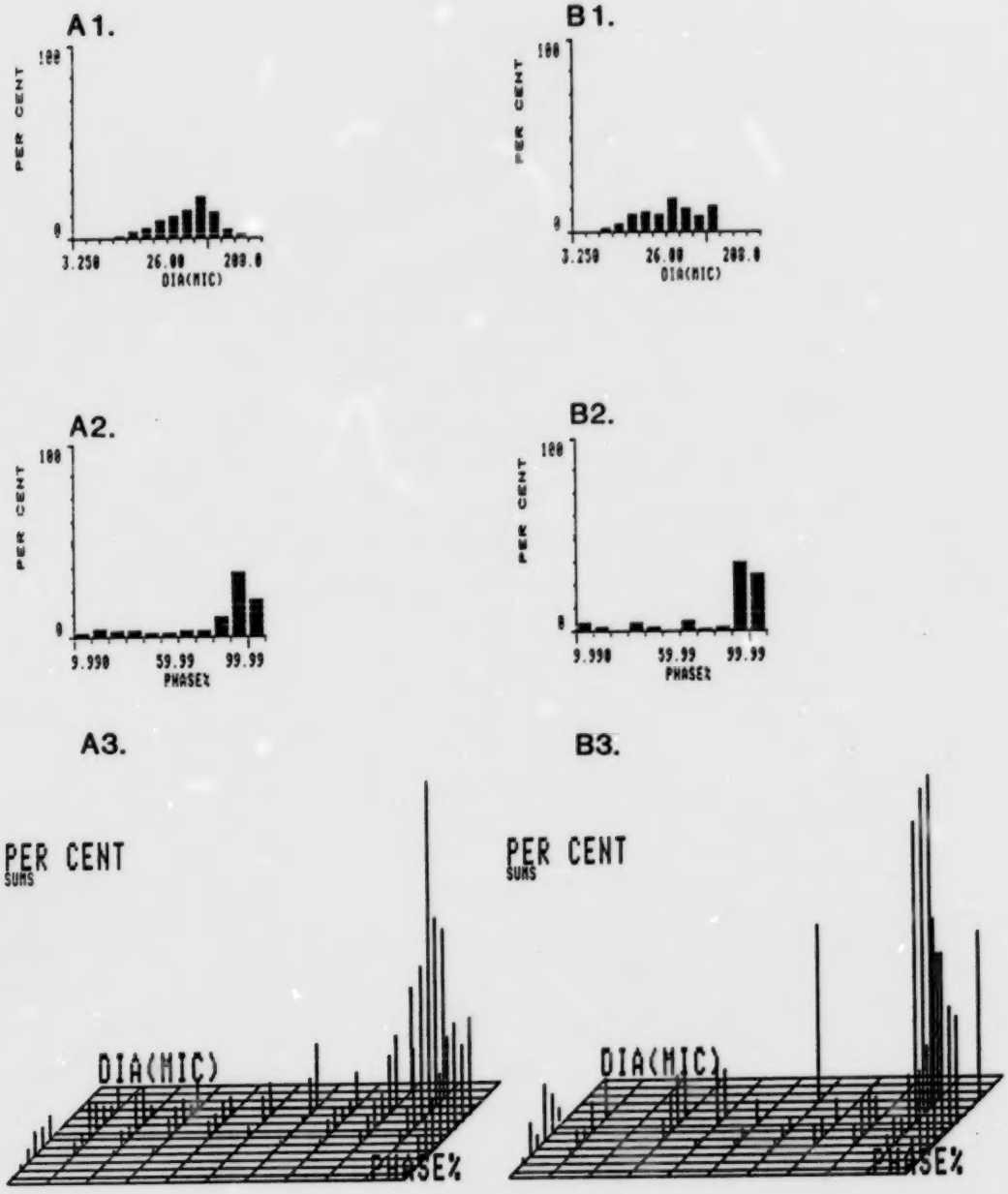

FIGURE 12.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-7. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

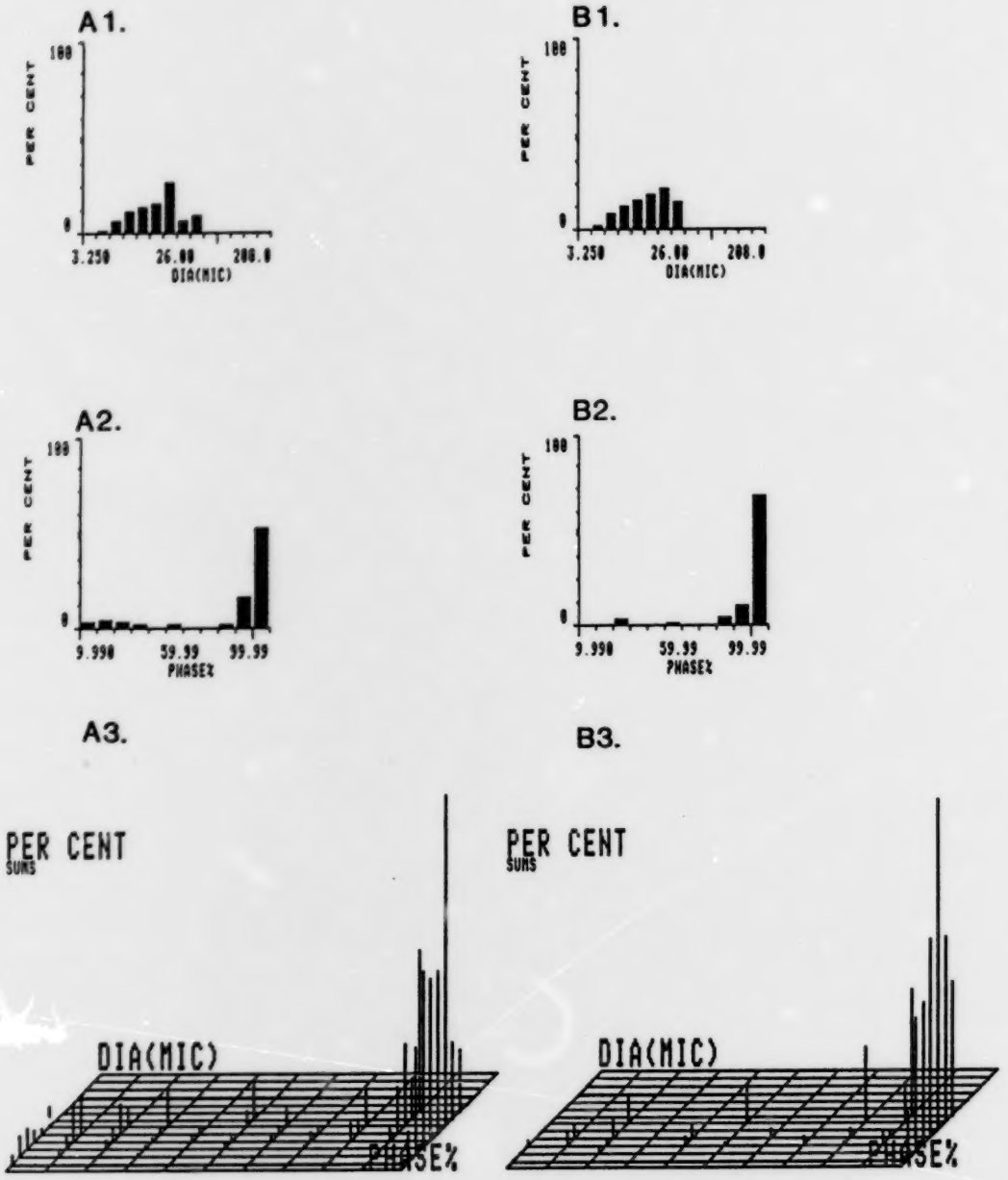

FIGURE 13.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-8. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

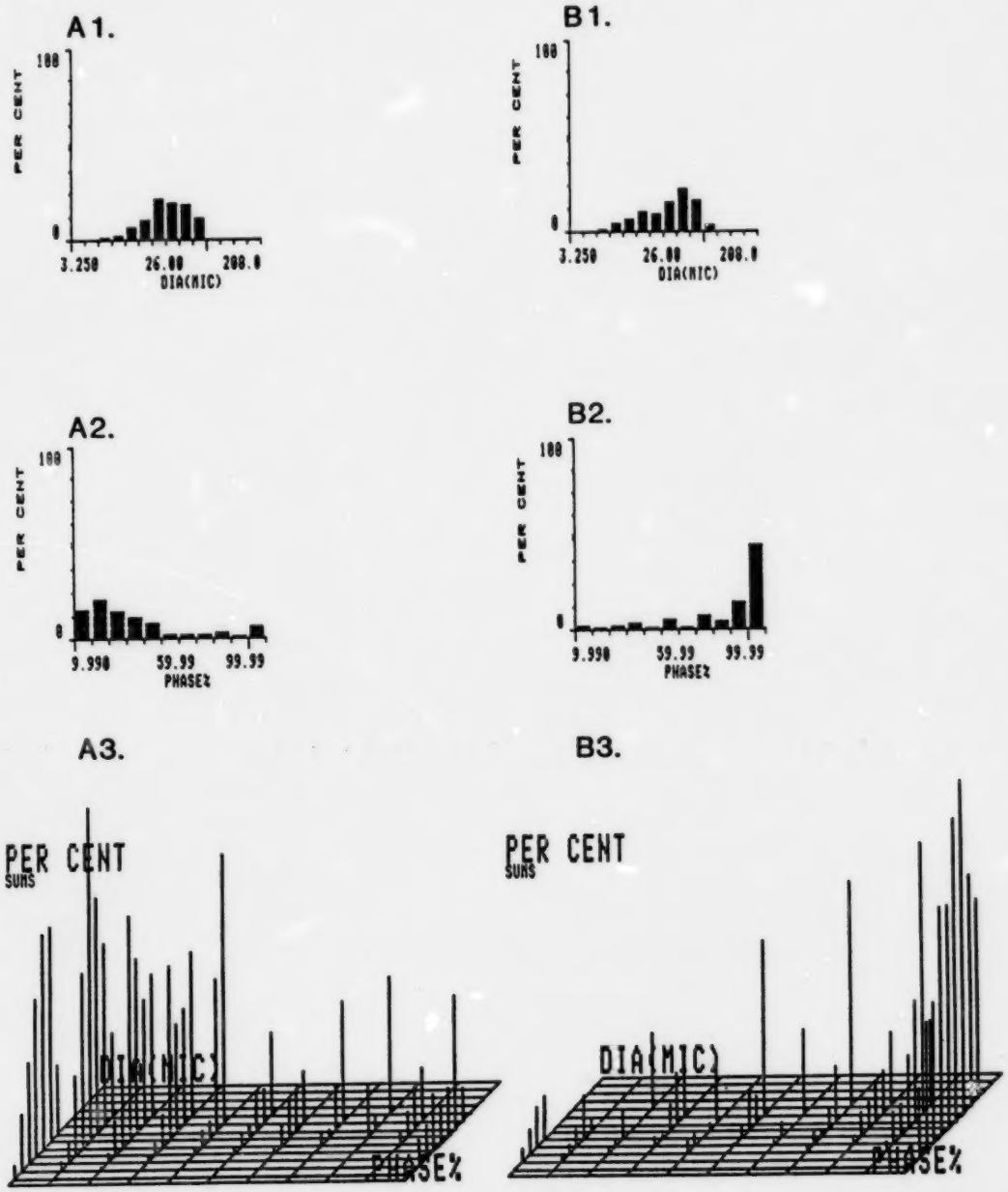

FIGURE 14.

Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-9. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

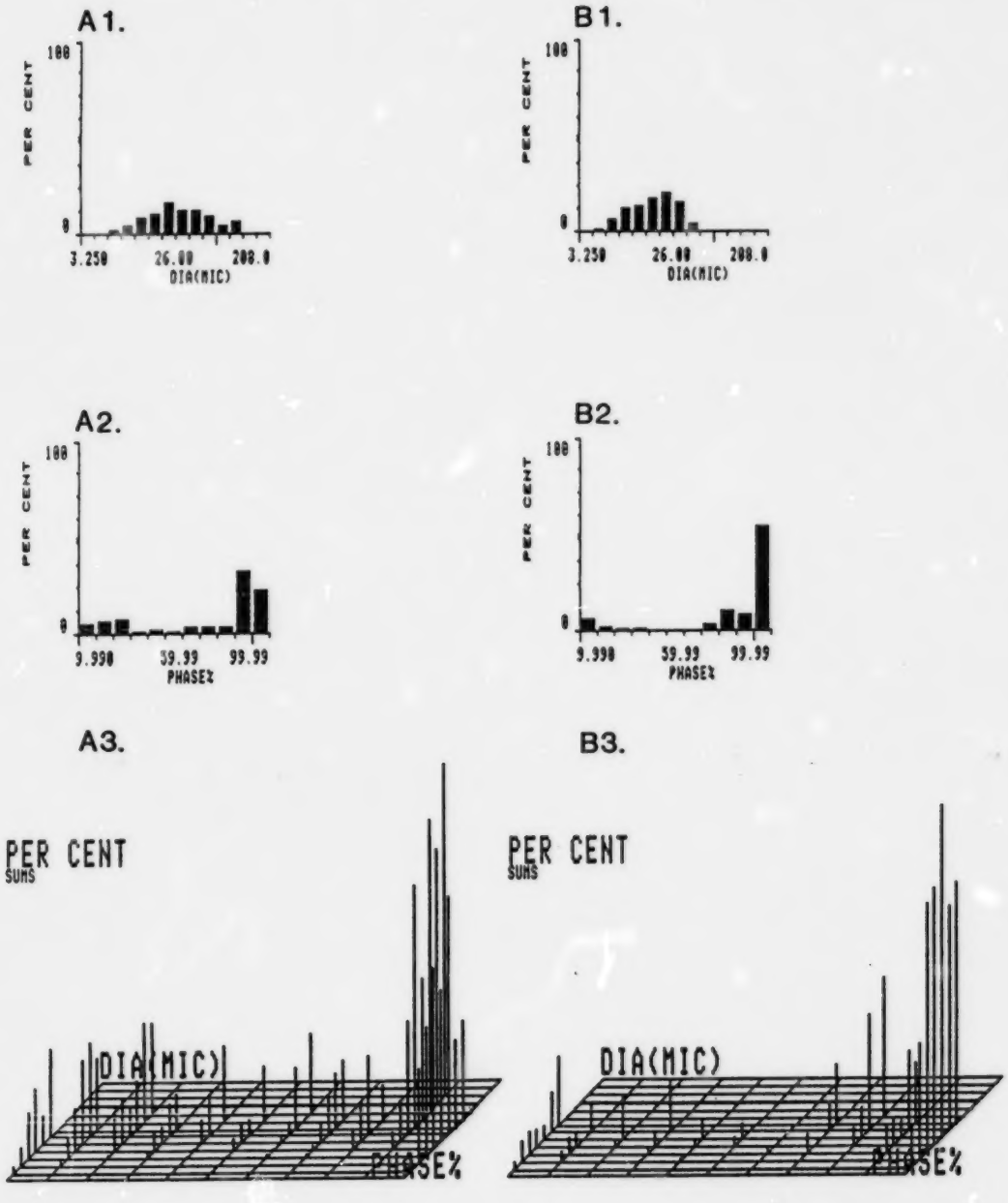

FIGURE 15.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-10. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

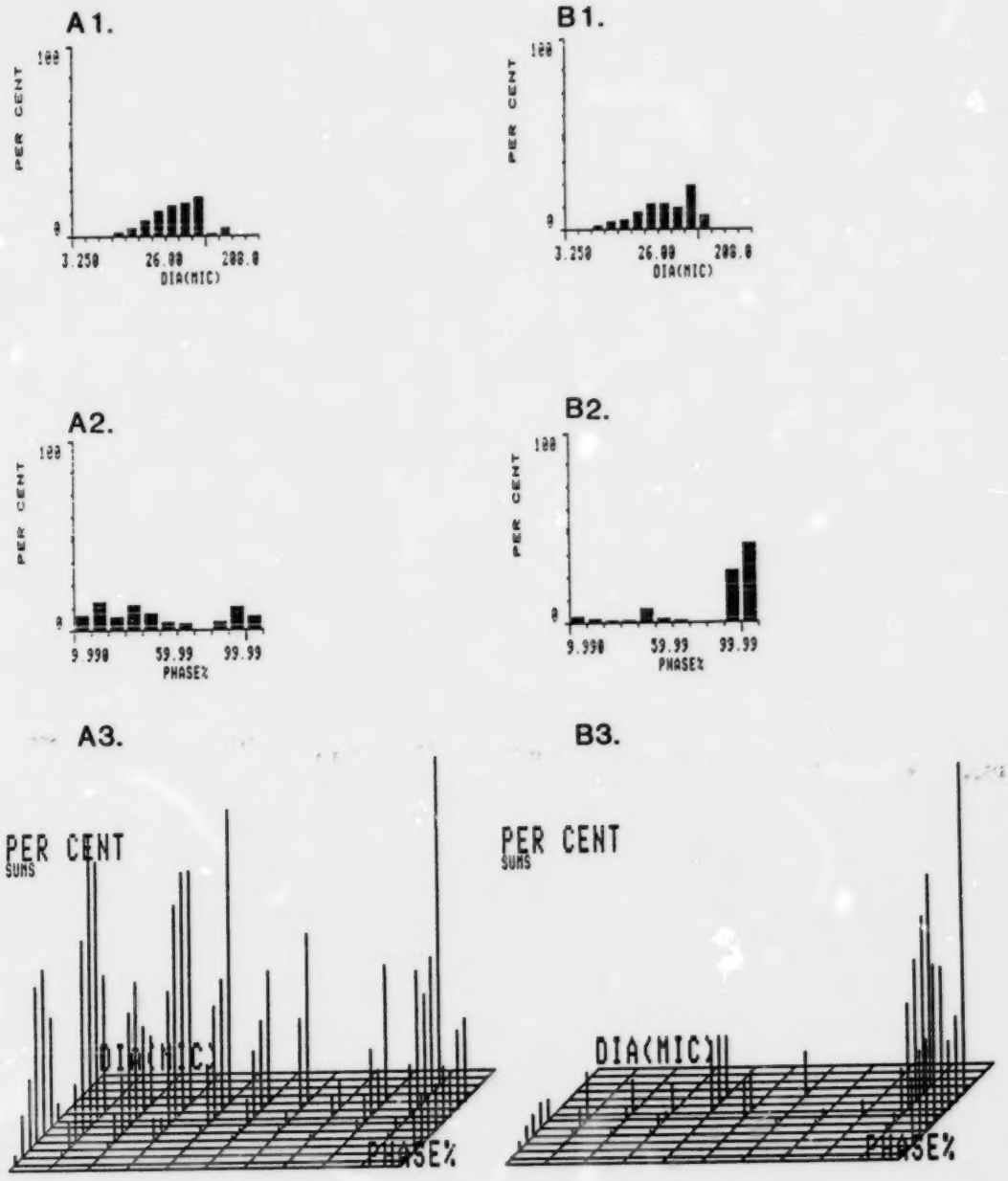

FIGURE 16.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-11. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

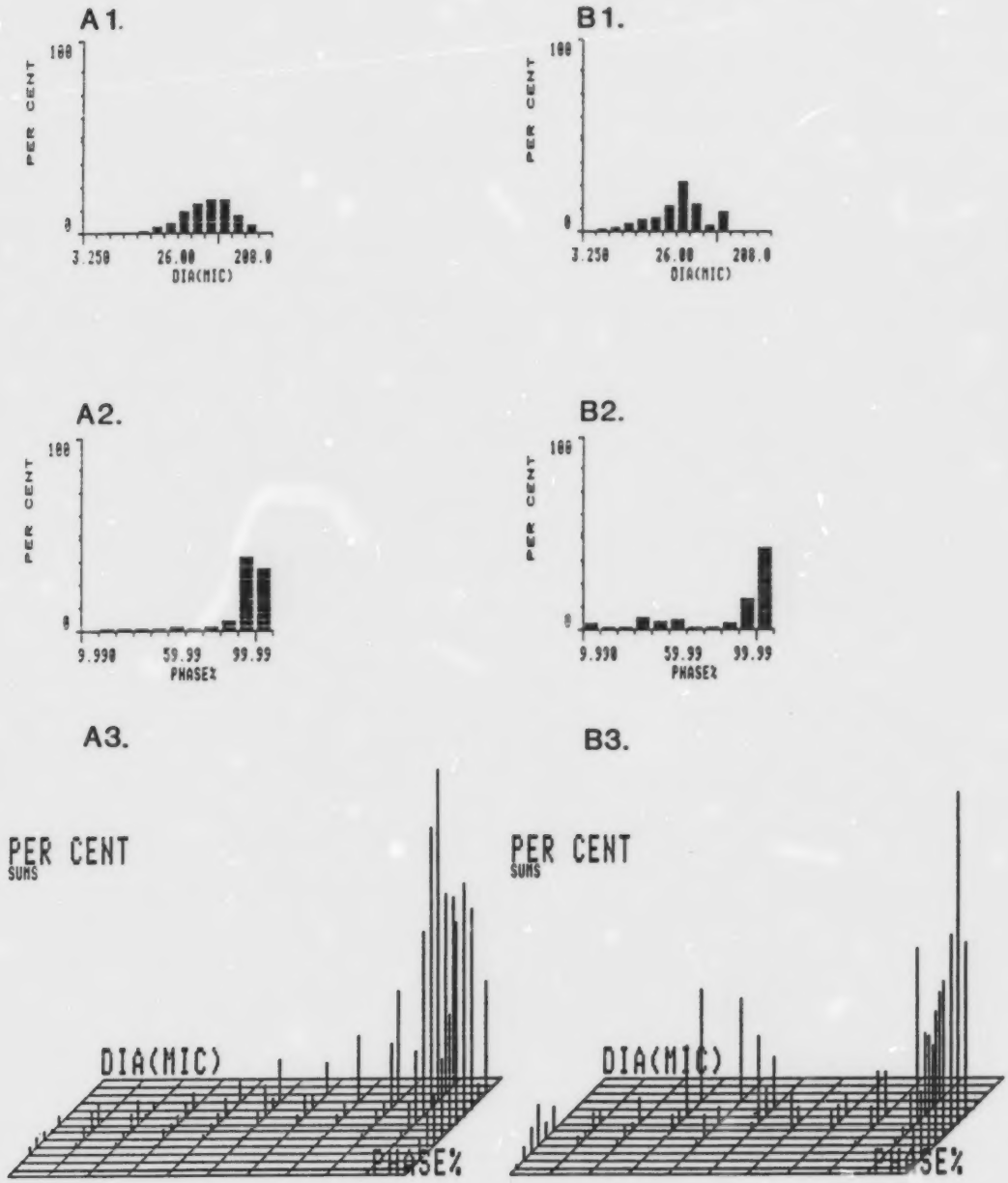

FIGURE 17.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-12. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

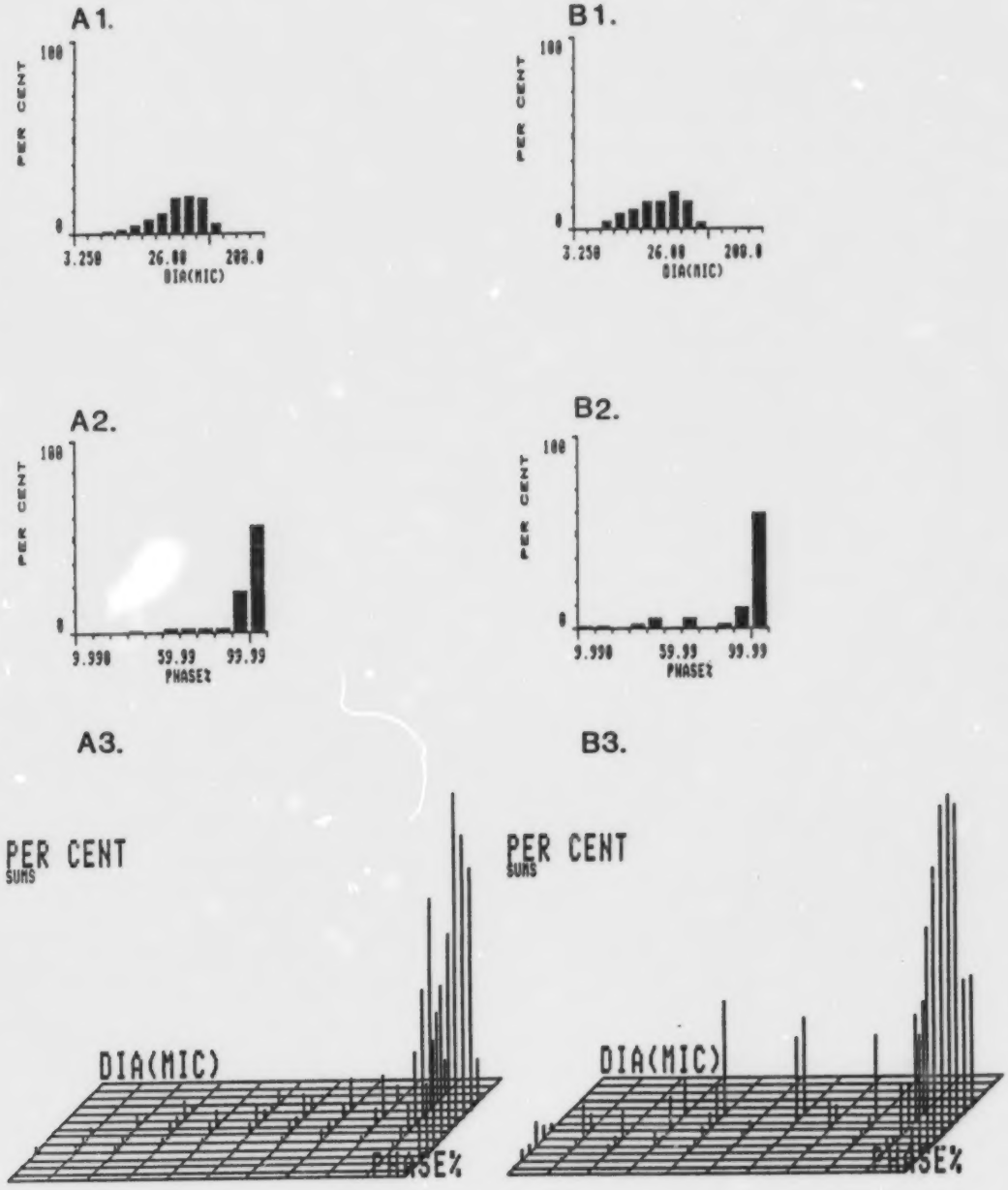

FIGURE 18.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-14. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

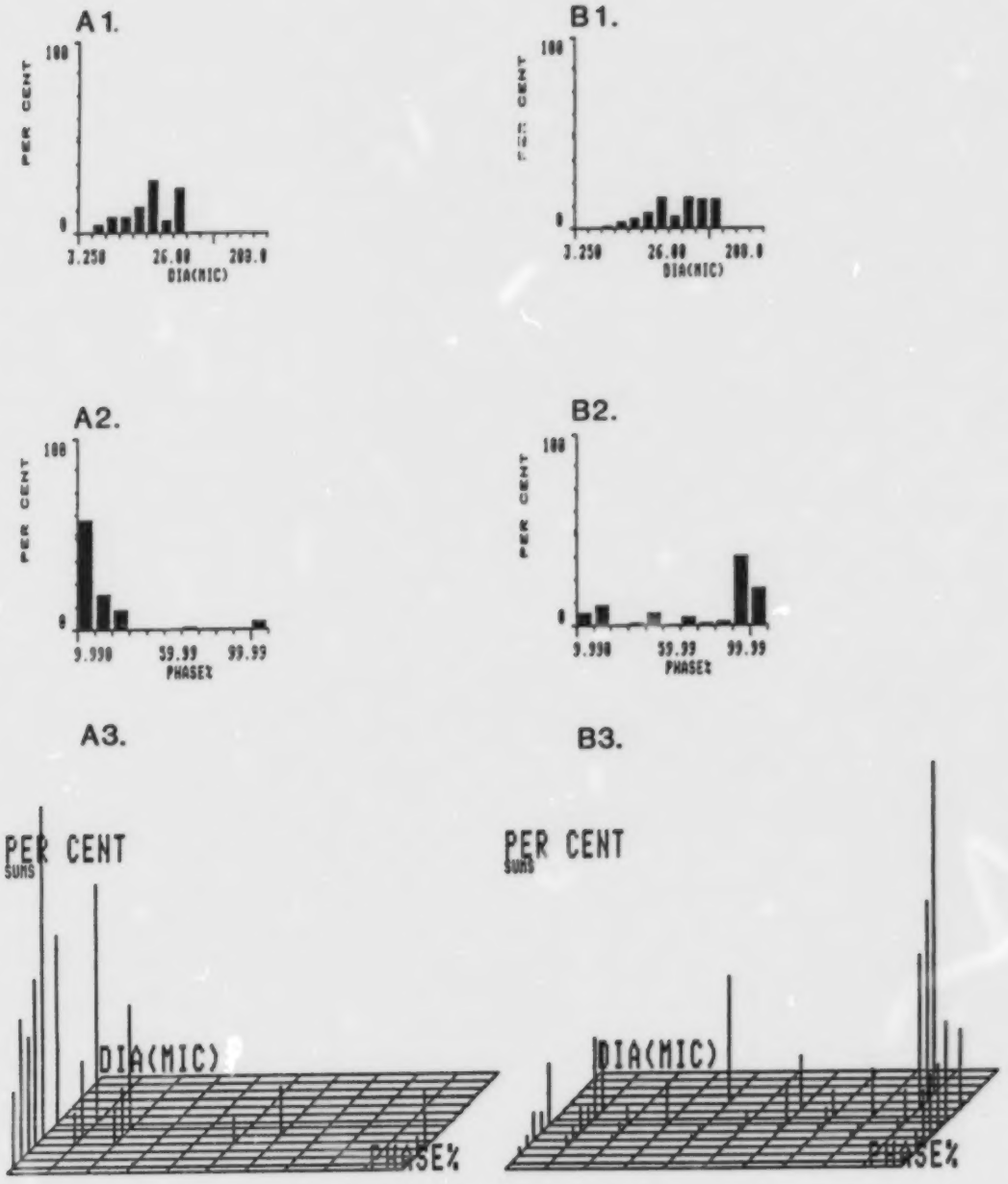

FIGURE 19.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINEPALS in sample HB.MP-15. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

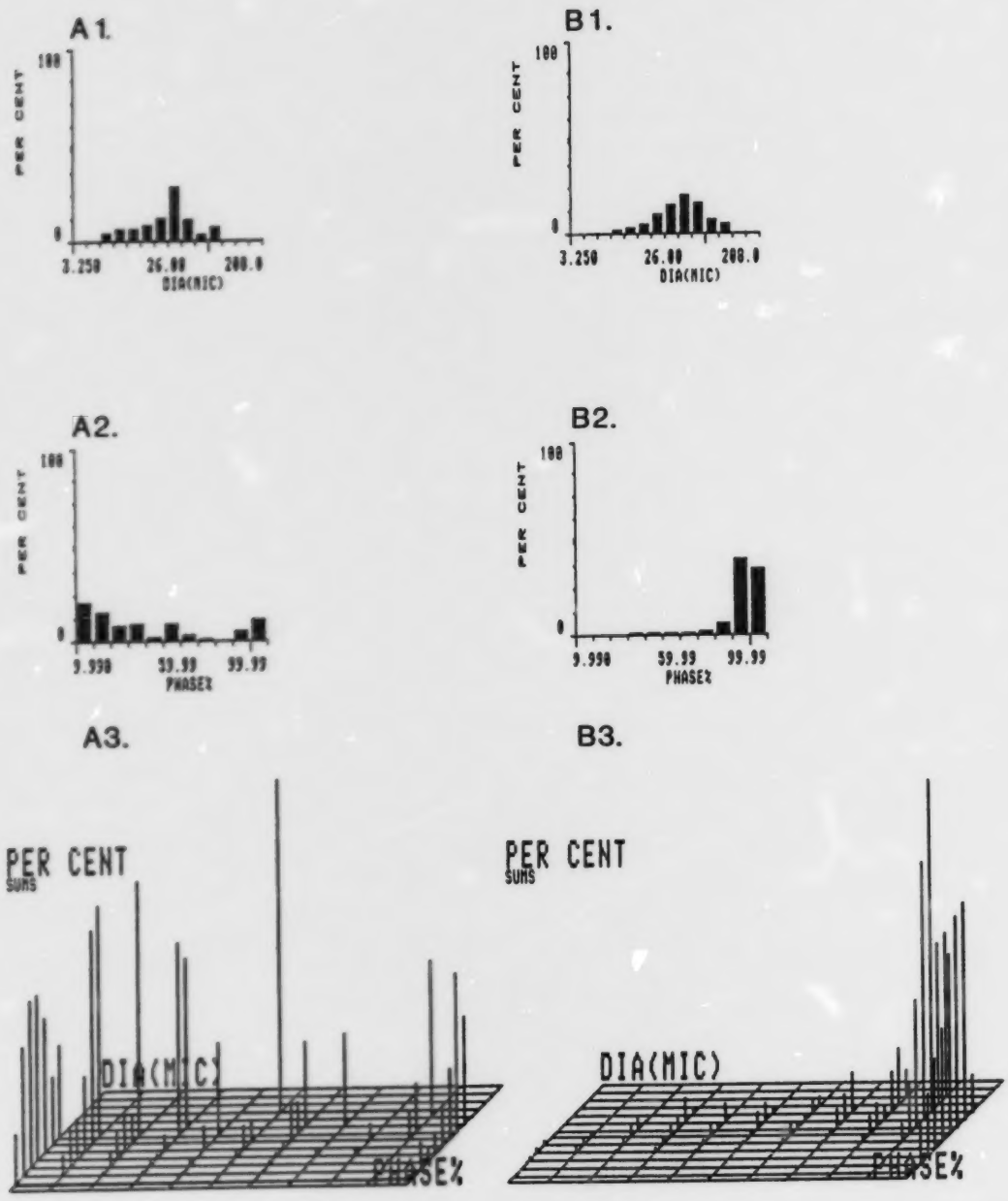

FIGURE 20.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-16. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

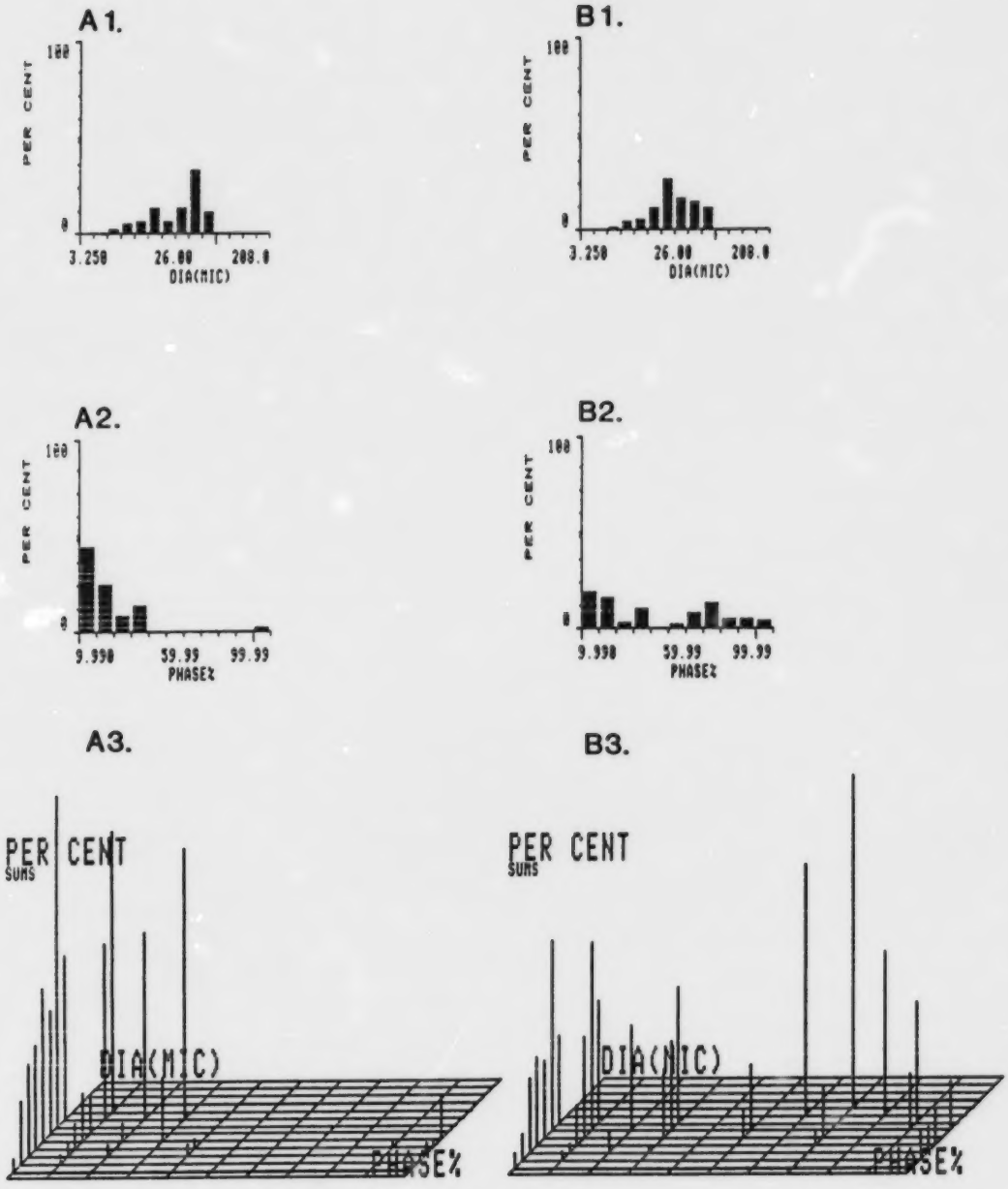

FIGURE 21.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-17. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

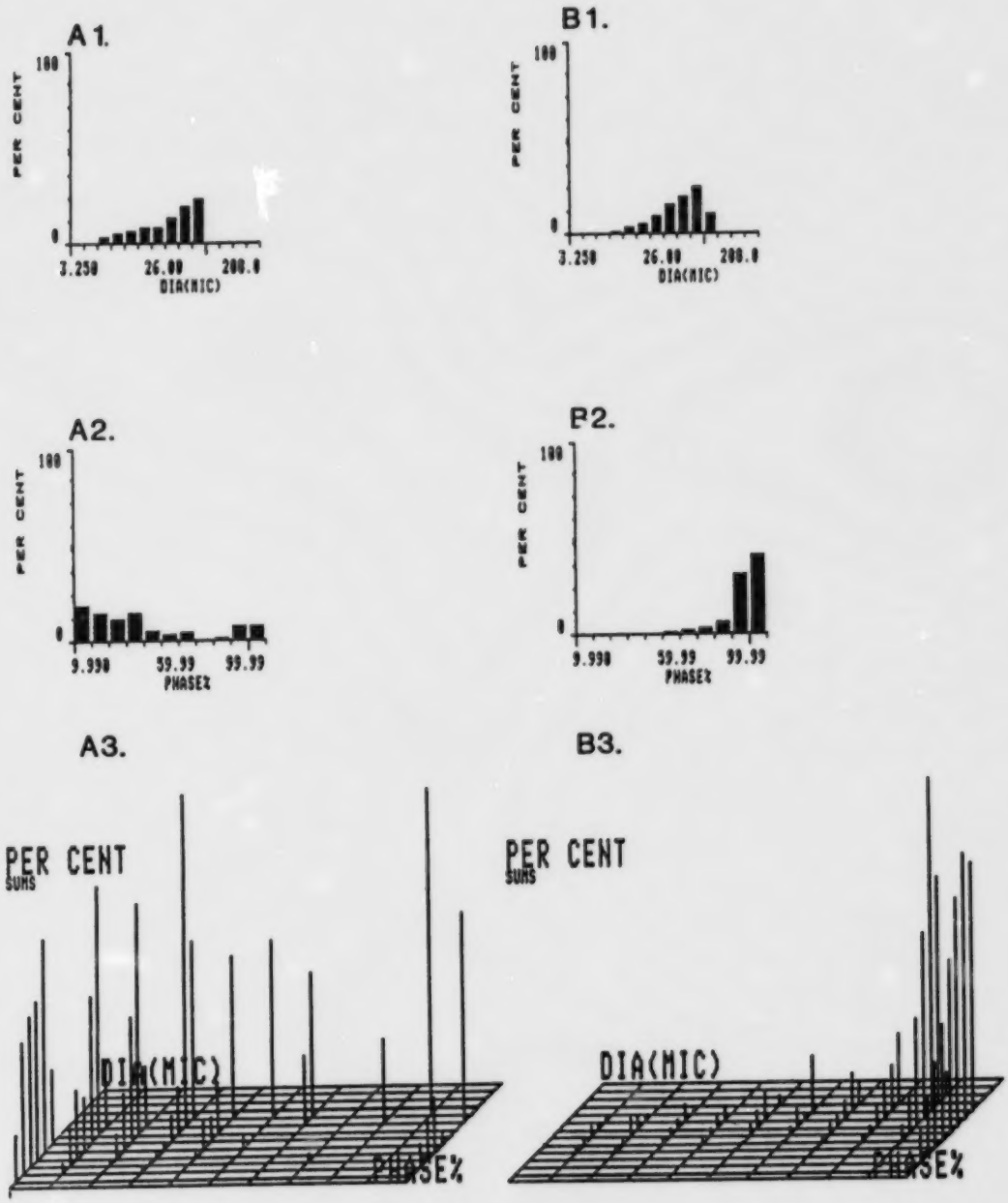

FIGURE 22.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-18. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

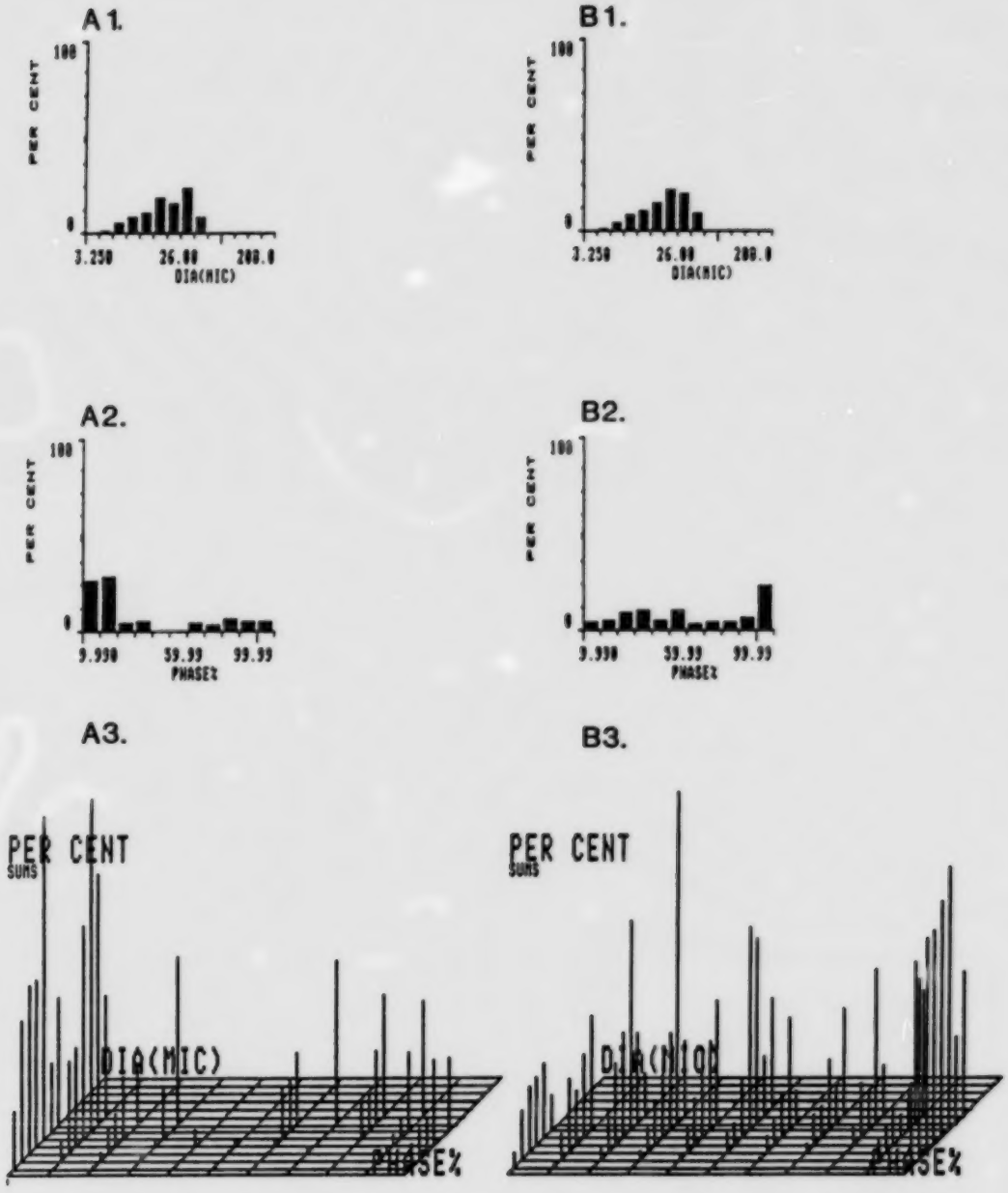

FIGURE 23.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-19. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

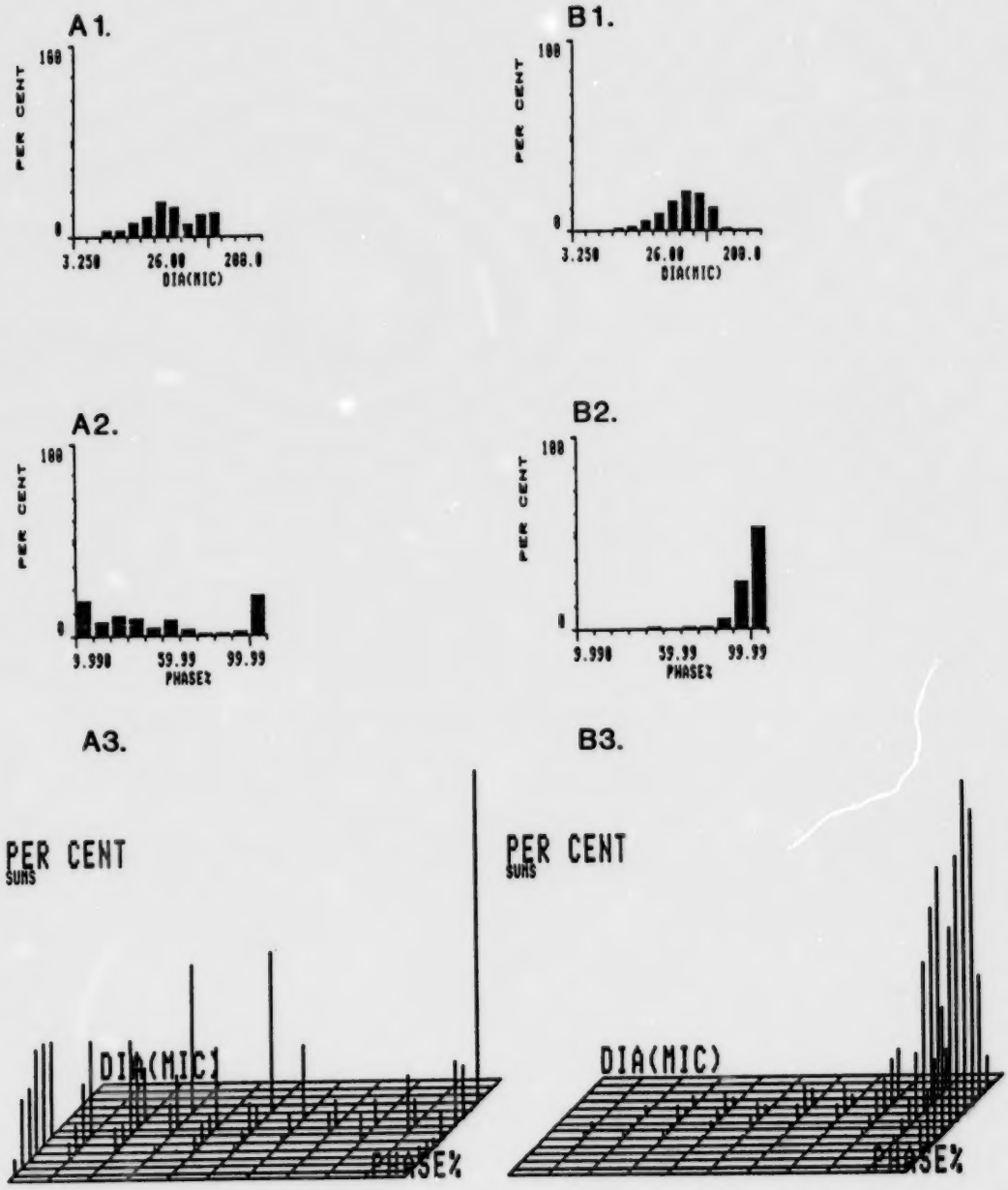

FIGURE 24.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-20. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

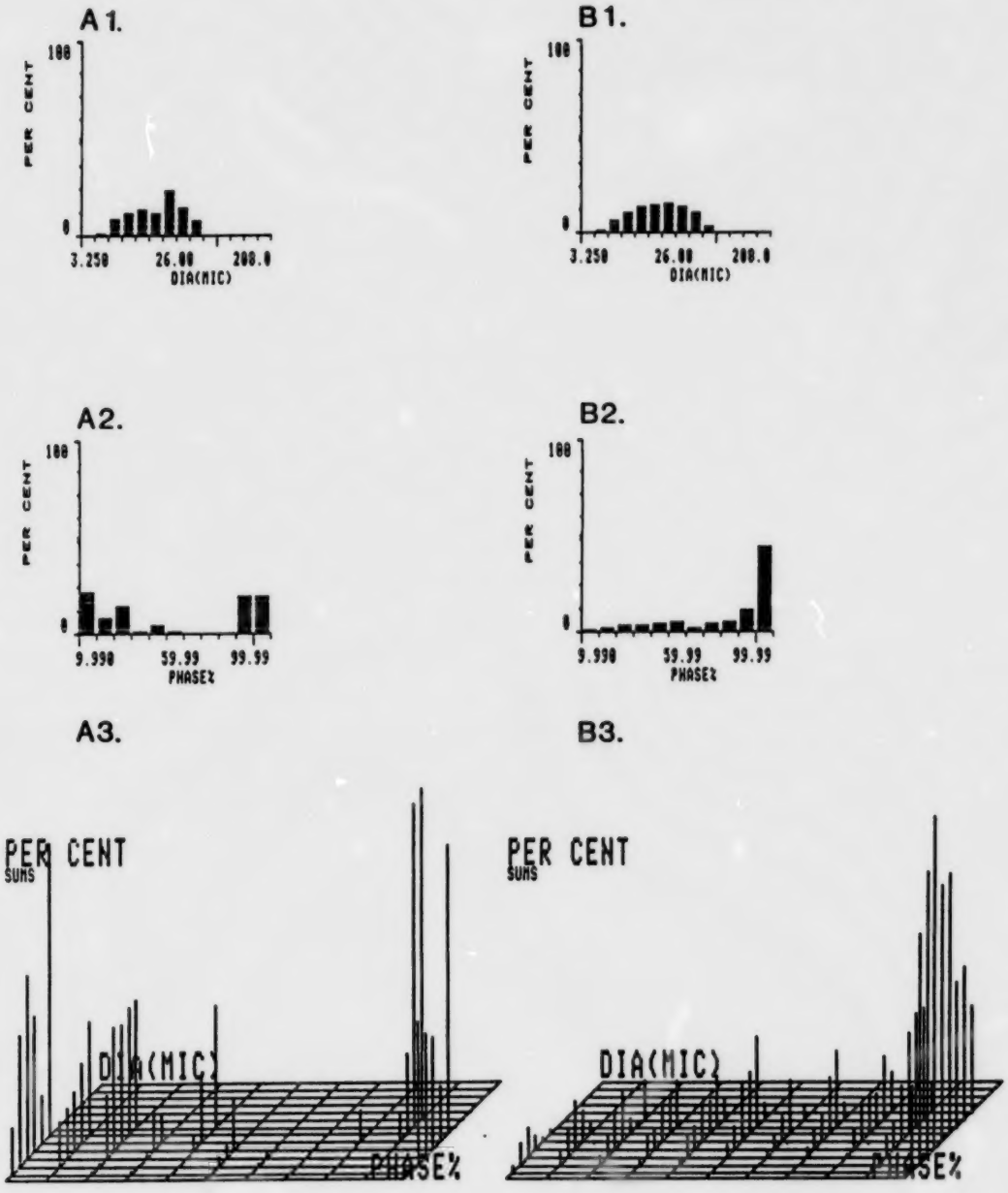

FIGURE 25.
Histograms giving (1) the size distribution, and (2) the classification of (A) CHALCOPYRITE and (B) SPHALERITE locked with ALL MINERALS in sample HB.MP-21. The 3-D diagram (3) shows the size distribution for the grains of the MINERAL OF INTEREST in each class of particle. The extreme right side of each diagram gives the size distribution of the free MINERAL OF INTEREST grains as seen in polished section.

Appendix D

TABLES OF GRAIN SIZE DISTRIBUTIONS AND CLASSIFICATIONS OF CHALCOPYRITE, SPHALERITE AND GALENA FOR 3-D DIAGRAMS.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	29.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	26.0	55.0
4.60	515.	27.0	0.00	0.00	0.00	0.00	17.0	0.00	0.00	19.0	176.	754.
6.50	.131E+04	93.0	79.0	132.	22.0	95.0	78.0	0.00	0.00	119.	.133E+04	.326E+04
9.19	.262E+04	621.	0.00	173.	67.0	77.0	52.0	262.	0.00	176.	.297E+04	.702E+04
13.0	.337E+04	655.	336.	201.	318.	324.	455.	280.	410.	519.	.526E+04	.121E+05
18.4	.270E+04	.227E+04	436.	457.	207.	299.	846.	0.00	.165E+04	.116E+04	.750E+04	.175E+05
26.0	.591E+04	.363E+04	.146E+04	0.00	0.00	871.	815.	670.	.194E+04	.288E+04	.618E+04	.243E+05
36.8	.396E+04	.559E+04	.433E+04	0.00	.117E+04	.187E+04	0.00	.236E+04	.160E+04	.374E+04	.781E+04	.316E+05
52.0	0.00	0.00	0.00	.166E+04	.172E+04	0.00	.402E+04	.544E+04	.408E+04	.811E+04	.323E+04	.283E+05
73.5	0.00	0.00	.837E+04	0.00	.278E+04	0.00	0.00	0.00	.428E+04	.275E+05	0.00	.429E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.544E+04	.163E+05	.571E+04	0.00	.275E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.204E+05	.129E+05	.150E+05	.262E+04	.628E+04	.274E+04	.628E+04	.145E+05	.303E+05	.439E+05	.345E+05	.195E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.148E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.133E-01	.282E-01
4.60	.264	.138E-01	0.00	0.00	0.00	0.00	.670E-02	0.00	0.00	.973E-02	.901E-01	.386
6.50	.669	.476E-01	.405E-01	.676E-01	.113E-01	.486E-01	.399E-01	0.00	0.00	.609E-01	.682	1.67
9.19	1.34	.318	0.00	.886E-01	.343E-01	.394E-01	.266E-01	.134	0.00	.901E-01	1.52	3.59
13.0	1.73	.335	.172	.183	.163	.166	.233	.143	.210	.266	2.69	6.21
18.4	1.38	1.16	.223	.234	.106	.153	.433	0.00	.845	.597	3.84	8.98
26.0	3.02	1.86	.747	0.00	0.00	.446	.417	.343	.994	1.43	3.17	12.4
36.8	2.03	2.86	2.22	0.00	.597	.549	0.00	1.21	.820	1.91	4.00	16.2
52.0	0.00	0.00	0.00	.851	.882	0.00	2.06	2.78	2.09	4.15	1.66	14.5
73.5	0.00	0.00	4.28	0.00	1.42	0.00	0.00	0.00	2.19	14.1	0.00	22.0
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.79	8.35	2.92	0.00	14.1
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	10.4	6.60	7.69	1.34	3.22	1.40	3.22	7.40	15.5	25.5	17.7	100.

TABLE 4.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-1. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	29.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	41.0	70.0
4.60	434.	0.00	0.00	0.00	0.00	0.00	0.00	11.0	0.00	0.00	453.	898.
6.50	772.	99.0	140.	87.0	93.0	27.0	70.0	0.00	0.00	161.	.161E+04	.307E+04
9.19	.152E+04	702.	115.	233.	83.0	116.	102.	51.0	0.00	209.	.255E+04	.568E+04
13.0	.204E+04	151.	559.	378.	91.0	0.00	197.	144.	0.00	397.	.215E+04	.611E+04
18.4	.374E+04	.303E+04	.112E+04	.140E+04	0.00	442.	627.	191.	850.	971.	.372E+04	.161E+05
26.0	.348E+04	.140E+04	604.	380.	0.00	0.00	585.	669.	653.	.269E+04	.649E+04	.169E+05
36.8	797.	.385E+04	.271E+04	.339E+04	.190E+04	0.00	766.	.146E+04	.422E+04	.386E+04	.610E+04	.282E+05
52.0	0.00	.393E+04	.192E+04	.149E+04	.159E+04	.458E+04	0.00	.166E+04	.282E+04	.751E+04	.181E+04	.273E+05
73.5	0.00	0.00	.610E+04	0.00	0.00	.433E+04	0.00	.410E+04	.308E+04	.229E+05	.403E+04	.445E+05
104.	0.00	0.00	.622E+04	0.00	0.00	0.00	0.00	.105E+05	0.00	.164E+05	0.00	.331E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.127E+05	.124E+05	.195E+05	.736E+04	.375E+04	.949E+04	.235E+04	.108E+05	.116E+05	.551E+05	.289E+05	.182E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.159E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.225E-01	.385E-01
4.60	.239	0.00	0.00	0.00	0.00	0.00	0.00	.605E-02	0.00	0.00	.249	.494
6.50	.424	.544E-01	.813E-01	.478E-01	.511E-01	.148E-01	.385E-01	0.00	0.00	.885E-01	.888	1.69
9.19	.835	.386	.632E-01	.128	.456E-01	.638E-01	.561E-01	.200E-01	0.00	.115	1.40	3.12
13.0	1.12	.838E-01	.307	.208	.500E-01	0.00	.108	.791E-01	0.00	.218	1.18	3.36
18.4	2.06	1.66	.617	.769	0.00	.243	.345	.105	.467	.534	2.84	8.84
26.0	1.87	.772	.332	.209	0.00	0.00	.322	.368	.359	1.48	3.57	9.27
36.8	.438	1.67	1.49	1.06	1.04	0.00	.421	.884	2.32	2.12	3.35	15.5
52.0	0.00	2.16	1.06	.819	.873	2.52	0.00	.912	1.55	4.13	.993	15.0
73.5	0.00	0.00	3.35	0.00	0.00	2.38	0.00	2.25	1.69	12.6	2.22	24.5
104.	0.00	0.00	3.42	0.00	0.00	0.00	0.00	5.76	0.00	9.00	0.00	18.2
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7.00	6.79	10.7	4.04	2.06	5.22	1.29	10.3	6.39	30.3	15.9	100.0

TABLE 5.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-1. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0	
3.25	3.98	0.00	.117	0.00	0.00	0.00	.52:E-01	0.00	.130	0.00	1.17	5.46
[illegible]	5.68	.195	.180	0.00	0.00	.281	0.00	0.00	0.00	0.00	[illegible]	[illegible]
6.50	7.24	1.37	.286	.456	.521	.404	0.00	.456	0.00	.352	3.83	14.9
9.19	[illegible]	[illegible]	.651	1.84	.938	1.07	.364	1.58	.630	0.00	[illegible]	[illegible]
13.0	6.90	2.37	1.26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.56	14.1
18.4	2.94	2.21	3.46	9.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.0
26.0	0.00	0.00	0.00	6.86	0.00	0.00	0.00	0.00	0.00	0.00	7.29	14.2
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	36.5	10.1	5.96	18.5	1.46	1.69	1.02	2.03	1.07	.352	21.3	100.0

TABLE 6.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-1. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	27.2	0.00	0.00	20.2	7.88	0.00	0.00	0.00	0.00	9.64	126.	191.
4.60	729.	113.	70.1	116.	58.7	0.00	0.00	0.00	46.4	70.1	.214E+04	.334E+04
6.50	.194E+04	585.	466.	85.0	106.	236.	104.	66.6	92.9	185.	.757E+04	.114E+05
9.19	.300E+04	.116E+04	465.	421.	492.	421.	428.	267.	251.	281.	.843E+04	.156E+05
13.0	.498E+04	.261E+04	609.	187.	225.	449.	705.	912.	737.	.106E+04	.993E+04	.224E+05
18.4	.552E+04	.443E+04	.222E+04	.151E+04	695.	.122E+04	708.	.212E+04	.256E+04	.362E+04	.112E+05	.359E+05
26.0	.544E+04	.510E+04	.714E+04	.352E+04	.237E+04	.312E+04	371.	574.	.773E+04	.889E+04	.927E+04	.535E+05
36.0	.244E+04	.126E+05	.751E+04	.741E+04	.507E+04	.185E+04	.422E+04	.688E+04	.777E+04	.245E+05	.923E+04	.895E+05
52.0	.374E+04	.332E+04	.617E+04	.503E+04	.417E+04	.561E+04	.477E+04	.810E+04	.346E+05	.531E+05	.205E+05	.149E+06
73.5	0.00	0.00	.282E+04	.272E+04	.312E+04	.457E+04	.824E+04	0.00	.173E+05	.883E+05	.770E+04	.135E+06
104.	0.00	0.00	0.00	.101E+05	0.00	.793E+04	.117E+05	.838E+04	.228E+05	.519E+05	0.00	.113E+06
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.301E+05	0.00	.301E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.416E+05	0.00	.416E+05
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.278E+05	.30NE+05	.275E+05	.311E+05	.163E+05	.254E+05	.314E+05	.273E+05	.939E+05	.304E+06	.860E+05	.700E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.388E-02	0.00	0.00	.288E-02	.113E-02	0.00	0.00	0.00	0.00	.138E-02	.188E-01	.273E-01
4.60	.104	.161E-01	.100E-01	.165E-01	.838E-02	0.00	0.00	0.00	.663E-02	.100E-01	.306	.477
6.50	.277	.836E-01	.666E-01	.121E-01	.151E-01	.337E-01	.149E-01	.951E-02	.133E-01	.264E-01	1.08	1.63
9.19	.428	.166	.664E-01	.600E-01	.703E-01	.602E-01	.610E-01	.382E-01	.358E-01	.402E-01	1.20	2.23
13.0	.711	.373	.869E-01	.268E-01	.321E-01	.642E-01	.101	.130	.105	.151	1.42	3.20
18.4	.788	.633	.317	.215	.992E-01	.174	.112	.303	.366	.517	1.59	5.12
26.0	.776	.728	1.02	.503	.339	.445	.529E-01	.819E-01	1.10	1.27	1.32	7.64
36.0	.348	1.80	1.07	1.06	.724	.265	.603	.983	1.11	3.50	1.32	12.8
52.0	.535	.474	.880	.718	.596	.800	.681	1.16	4.94	7.50	2.93	21.3
73.5	0.00	0.00	.403	.388	.445	.653	1.18	0.00	2.47	12.6	1.10	19.2
104.	0.00	0.00	0.00	1.44	0.00	1.13	1.68	1.20	3.26	7.41	0.00	16.1
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.30	0.00	4.30
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.94	0.00	5.94
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.97	4.28	3.92	4.44	2.33	3.63	4.48	3.90	13.4	43.4	12.3	100.0

TABLE 7.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-2. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	34.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	61.3	95.5
4.60	157.	50.7	19.3	46.4	45.6	0.00	0.00	0.00	17.5	68.3	852.	.126E+04
6.50	485.	25.4	33.3	37.7	0.00	152.	54.3	112.	22.8	270.	.255E+04	.367E+04
9.19	702.	150.	45.6	78.0	164.	0.00	82.4	170.	271.	278.	.230E+04	.432E+04
13.0	.138E+04	248.	238.	116.	0.00	128.	675.	244.	854.	385.	.354E+04	.773E+04
18.4	643.	944.	325.	463.	390.	100.	.149E+04	371.	734.	.146E+04	.357E+04	.106E+05
26.0	.163E+04	.194E+04	0.00	637.	0.00	957.	698.	.166E+04	.131E+04	.295E+04	.397E+04	.158E+05
36.8	952.	0.00	0.00	.170E+04	.132E+04	0.00	.185E+04	853.	.193E+04	.376E+04	.131E+04	.137E+05
52.0	0.00	0.00	0.00	0.00	.415E+04	0.00	0.00	.153E+04	.163E+04	.226E+04	0.00	.956E+04
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.292E+04	0.00	.698E+04	0.00	.990E+04
104.	0.00	0.00	0.00	0.00	0.00	0.00	.607E+04	0.00	0.00	0.00	0.00	.607E+04
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.113E+05	0.00	.113E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.598E+04	.336E+04	661.	.315E+04	.607E+04	.142E+04	.109E+05	.787E+04	.676E+04	.296E+05	.182E+05	.939E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.364E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.653E-01	.102
4.60	.167	.625E-01	.205E-01	.494E-01	.485E-01	0.00	0.00	0.00	.107E-01	.727E-01	.907	1.35
6.50	.431	.270E-01	.354E-01	.401E-01	0.00	.162	.578E-01	.119	.242E-01	.287	2.72	3.90
9.19	.833	.159	.485E-01	.830E-01	.174	0.00	.677E-01	.181	.288	.296	2.45	4.60
13.0	1.47	.264	.254	.123	0.00	.136	.718	.260	.909	.325	3.77	8.23
18.4	.685	1.00	.346	.492	.415	.191	1.58	.395	.782	1.55	3.00	11.2
26.0	1.73	2.06	0.00	.670	0.00	1.02	.743	1.77	1.39	3.14	4.23	16.8
36.8	1.01	0.00	0.00	1.09	1.41	0.00	1.97	.908	2.05	4.01	1.39	14.6
52.0	0.00	0.00	0.00	0.00	4.42	0.00	0.00	1.63	1.73	2.40	0.00	10.2
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.11	0.00	7.43	0.00	10.5
104.	0.00	0.00	0.00	0.00	0.00	0.00	6.47	0.00	0.00	0.00	0.00	6.47
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.0	0.00	12.0
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6.37	3.58	.704	3.36	6.46	1.51	11.6	8.37	7.20	31.5	19.3	100.0

TABLE 8.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-2. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	9.07	.593	.282	0.00	0.00	0.00	0.00	0.00	0.00	.339	4.46	14.7
4.60	7.06	0.00	0.00	0.00	.678	.508	.508	0.00	0.00	0.00	6.10	14.9
6.50	9.38	1.24	0.00	0.00	0.00	3.05	0.00	0.00	0.00	0.00	5.59	19.3
9.19	8.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.45	12.1
13.0	4.24	0.00	9.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.5
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0	0.00	13.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.8	25.5
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	38.4	15.5	9.57	0.00	.678	3.59	.508	0.00	0.00	.339	31.4	100.0

TABLE 9.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-2. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.01	8.76	
3.25												
230.	35.9	0.00	0.00	0.00	0.00	0.00	0.00	16.6	0.00	65.7	357.	
4.60												
496.	131.	0.00	0.00	0.00	33.3	36.6	0.00	0.00	34.2	70.1	801.	
6.50												
.127E+04	74.5	74.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	163.	.136E+04	
9.19												
.163E+04	142.	133.	0.00	88.5	159.	0.00	0.00	97.2	0.00	118.	.857E+04	
13.0												
.168E+04	398.	0.00	0.00	169.	0.00	0.00	882.	278.	0.00	187.	.888E+04	
18.4												
.383E+04	0.00	387.	344.	0.00	0.00	541.	0.00	0.00	0.00	0.00	.438E+04	
26.0												
0.00	.122E+04	0.00	0.00	0.00	.195E+04	0.00	0.00	781.	0.00	678.	.373E+04	
36.8												
0.00	0.00	0.00	.137E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.137E+04	
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
.845E+04	.898E+04	595.	.171E+04	856.	.184E+04	578.	882.	.117E+04	34.2	.183E+04	.175E+05	

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
.198E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.498E-01	.598E-01	
3.25												
1.36	.895	0.00	0.00	0.00	0.00	0.00	0.00	.958E-01	0.00	.375	8.03	
4.60												
2.83	.745	0.00	0.00	0.00	.198	.218	0.00	0.00	.195	.488	4.37	
6.50												
7.22	.485	.425	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.938	9.00	
9.19												
10.4	.818	.768	0.00	.585	.918	0.00	0.00	.585	0.00	.675	14.6	
13.0												
9.11	2.27	0.00	0.00	.965	0.00	0.00	1.15	1.55	0.00	1.97	16.1	
18.4												
17.3	0.00	2.21	1.96	0.00	0.00	3.09	0.00	0.00	0.00	0.00	24.5	
26.0												
0.00	6.95	0.00	0.00	0.00	5.96	0.00	0.00	4.46	0.00	3.87	21.3	
36.8												
0.00	0.00	0.00	7.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.00	
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
48.2	11.4	3.39	9.76	1.47	7.08	3.38	1.15	6.66	.195	7.36	100.0	

TABLE 10.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-3. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.4	18.4
3.25												
	839.	18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.5	339.	614.
4.60												
	526.	77.1	31.5	62.2	0.00	27.2	0.00	0.00	0.00	0.00	619.	.134E+04
6.50												
	723.	163.	46.2	78.6	0.00	58.7	143.	0.00	0.00	263.	.124E+04	.272E+04
9.19												
	.138E+04	875.	185.	0.00	0.00	0.00	113.	86.7	162.	217.	.247E+04	.475E+04
13.0												
	.146E+04	.117E+04	235.	385.	386.	0.00	230.	248.	678.	.132E+04	.316E+04	.933E+04
18.4												
	.115E+04	890.	0.00	864.	378.	942.	0.00	0.00	.159E+04	.117E+04	585.	.757E+04
26.0												
	762.	.486E+04	731.	0.00	0.00	.119E+04	0.00	815.	0.00	.431E+04	.247E+04	.151E+05
36.8												
	.157E+04	0.00	0.00	.140E+04	0.00	.144E+04	.261E+04	0.00	.287E+04	.244E+04	0.00	.115E+05
52.0												
	0.00	0.00	0.00	.297E+04	0.00	.448E+04	0.00	.291E+04	0.00	.349E+04	0.00	.138E+05
73.5												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
296.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.772E+04	.747E+04	.117E+04	.588E+04	678.	.814E+04	.312E+04	.406E+04	.450E+04	.132E+05	.109E+05	.669E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.275E-01	.275E-01
3.25												
	.358	.875E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.262E-01	.507	.919
4.60												
	.786	.115	.472E-01	.938E-01	0.00	.486E-01	0.00	0.00	0.00	0.00	.926	2.81
6.50												
	1.08	.844	.721E-01	.116	0.00	.878E-01	.214	0.00	0.00	.393	1.86	4.87
9.19												
	1.94	.411	.189	0.00	0.00	0.00	.169	.130	.242	.325	3.78	7.18
13.0												
	5.18	1.75	.251	.755	.461	0.00	.373	.371	1.01	1.97	4.73	14.8
18.4												
	1.72	1.34	0.00	1.29	.353	1.41	0.00	0.00	2.38	1.75	.875	11.3
26.0												
	1.14	7.87	1.09	0.00	0.00	1.78	0.00	1.22	0.00	6.45	3.78	22.6
36.8												
	5.35	0.00	0.00	2.19	0.00	2.16	3.91	0.00	3.09	3.66	0.00	17.3
52.0												
	0.00	0.00	0.00	4.44	0.00	6.78	0.00	4.36	0.00	5.21	0.00	20.7
73.5												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
296.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	11.5	11.2	1.75	8.79	1.91	12.2	4.67	6.08	6.72	19.8	16.3	100.0

TABLE 11.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-3. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	7.56	0.00	.489	0.00	0.00	0.00	0.00	0.00	.188	0.00	.828	9.07
4.60	6.77	0.00	0.00	0.00	0.00	.564	0.00	0.00	0.00	0.00	.527	7.86
6.50	5.98	0.00	2.90	1.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.6
9.19	9.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.14
13.0	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.1	20.1
18.4	7.79	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.79
26.0	15.5	0.00	19.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.4
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	62.8	0.00	23.3	1.73	0.00	.564	0.00	0.00	.188	0.00	11.4	100.0

TABLE 12.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-3. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.85	17.0	1.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	87.0	45.0
4.68	200.	57.0	0.00	50.0	19.0	39.0	0.00	0.00	8.00	55.0	993.	.141E+04
6.50	.139E+04	622.	282.	220.	279.	110.	36.0	9.00	26.0	340.	.644E+04	.975E+04
9.19	.228E+04	944.	561.	338.	860.	160.	146.	514.	0.00	987.	.122E+05	.184E+05
13.0	.316E+04	.195E+04	540.	919.	.105E+04	838.	772.	854.	.107E+04	.105E+04	.131E+05	.253E+05
18.4	.259E+04	.338E+04	.108E+04	.154E+04	.114E+04	389.	530.	.116E+04	.141E+04	.277E+04	.217E+05	.375E+05
26.0	.233E+04	.462E+04	.369E+04	.355E+04	.114E+04	.882E+04	0.00	494.	.863E+04	.110E+05	.278E+05	.582E+05
36.8	0.00	0.00	.241E+04	.384E+04	.485E+04	.895E+04	.378E+04	747.	.781E+04	.254E+05	.837E+05	.736E+05
52.0	0.00	.487E+04	0.00	.184E+04	.280E+04	.349E+04	.249E+04	.574E+04	.123E+05	.388E+05	.185E+05	.894E+05
73.5	0.00	.322E+04	0.00	.318E+04	0.00	0.00	0.00	.788E+04	.433E+04	.657E+05	.374E+04	.678E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.575E+04	.289E+05	.682E+04	.327E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.189E+05	.184E+05	.857E+04	.155E+05	.994E+04	.984E+04	.776E+04	.165E+05	.353E+05	.156E+06	.134E+06	.425E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.85	.488E-02	.833E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.636E-02	.186E-01
4.68	.471E-01	.134E-01	0.00	.118E-01	.447E-02	.918E-02	0.00	0.00	0.00	.125E-01	.234	.333
6.50	.327	.146	.664E-01	.518E-01	.657E-01	.278E-01	.848E-02	0.00	.618E-02	.808E-01	1.52	2.38
9.19	.538	.222	.132	.796E-01	.618E-01	.424E-01	.344E-01	.121	0.00	.232	2.86	4.34
13.0	.748	.459	.187	.216	.247	.197	.182	.291	.252	.247	3.88	5.96
18.4	.609	.775	.254	.363	.869	.727E-01	.125	.273	.331	.652	5.11	8.63
26.0	.349	.995	.878	.835	.869	.476	0.00	.116	.618	2.58	6.39	13.7
36.8	0.00	0.00	.568	.985	.954	.482	.890	.176	1.84	5.97	6.58	17.4
52.0	0.00	.958	0.00	.434	.478	.821	.587	1.35	2.89	7.06	4.37	18.9
73.5	0.00	.757	0.00	.749	0.00	0.00	0.00	1.65	1.82	15.5	.888	20.5
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35	4.93	1.42	7.70
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.62	4.33	2.62	3.65	2.34	2.13	1.63	3.69	8.31	37.2	31.5	100.

TABLE 13.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-4. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	16.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.0	33.0
4.60	113.	0.00	32.0	0.00	18.0	0.00	0.00	0.00	0.00	51.0	484.	618.
6.50	424.	117.	28.0	76.0	57.0	28.0	0.00	40.0	0.00	115.	.319E+04	.407E+04
9.19	586.	518.	265.	439.	127.	0.00	239.	134.	0.00	311.	.534E+04	.788E+04
13.0	464.	523.	287.	787.	295.	0.00	467.	194.	354.	294.	.638E+04	.996E+04
18.4	736.	0.00	0.00	287.	.118E+04	694.	384.	239.	768.	582.	.690E+04	.116E+05
26.0	389.	0.00	476.	656.	0.00	0.00	582.	.151E+04	999.	.257E+04	.543E+04	.108E+05
36.8	0.00	.137E+04	0.00	0.00	0.00	0.00	.117E+04	0.00	.148E+04	.385E+04	.496E+04	.128E+05
52.0	0.00	0.00	0.00	.139E+04	0.00	.636E+04	0.00	0.00	0.00	.598E+04	0.00	.137E+05
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.768E+04	.343E+04	.110E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.885E+04	.253E+04	.101E+04	.356E+04	.158E+04	.788E+04	.885E+04	.212E+04	.368E+04	.212E+05	.363E+05	.846E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.189E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.281E-01	.398E-01
4.60	.134	0.00	.378E-01	0.00	.213E-01	0.00	0.00	0.00	0.00	.683E-01	.478	.730
6.50	.581	.136	.331E-01	.922E-01	.674E-01	.331E-01	0.00	.473E-01	0.00	.136	3.77	4.82
9.19	.598	.612	.313	.519	.150	0.00	.282	.150	0.00	.368	6.31	9.31
13.0	.785	.618	.245	.930	.242	0.00	.552	.829	.418	.841	7.54	11.8
18.4	.879	0.00	0.00	.245	1.39	.828	.454	.282	.998	.393	8.16	13.7
26.0	.468	0.00	.563	.775	0.00	0.00	.688	1.78	1.18	3.84	6.65	15.1
36.8	0.00	1.62	0.00	0.00	0.00	0.00	1.39	0.00	1.75	4.55	5.86	15.2
52.0	0.00	0.00	0.00	1.64	0.00	7.51	0.00	0.00	0.00	7.07	0.00	16.2
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.06	13.0
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.37	2.99	1.19	4.00	1.87	8.37	3.37	2.58	4.25	25.0	42.9	100.

TABLE 14.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-4. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.85	7.71	0.00	0.00	0.00	.385	0.00	0.00	0.00	.174	.392	5.75	14.3
4.60	6.75	1.09	0.00	0.00	0.00	.784	0.00	0.00	0.00	0.00	4.09	12.7
6.58	4.01	0.00	0.00	1.35	0.00	0.00	1.48	0.00	0.00	0.00	4.57	11.4
9.19	5.01	3.05	0.00	3.01	2.74	0.00	0.00	0.00	0.00	0.00	5.44	19.3
13.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.49	20.1	25.6
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.71	0.00	0.00	16.7
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	23.5	4.14	0.00	4.36	3.05	.784	9.49	0.00	8.89	5.88	39.9	100.

TABLE 15.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-4. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.75
3.25												
294.	0.00	21.0	0.00	0.00	0.00	0.00	0.00	0.00	57.6	99.0	472.	
4.60												
584.	56.1	35.9	22.8	0.00	21.9	0.00	27.2	0.00	0.00	284.	951.	
6.50												
918.	230.	71.8	0.00	154.	0.00	0.00	0.00	0.00	0.00	253.	.163E+04	
9.19												
.228E+04	0.00	0.00	158.	0.00	67.6	151.	0.00	0.00	96.4	539.	.326E+04	
13.0												
.318E+04	488.	0.00	0.00	0.00	0.00	0.00	200.	0.00	228.	232.	.427E+04	
18.4												
.182E+04	.157E+04	359.	446.	357.	0.00	0.00	0.00	0.00	0.00	0.00	.455E+04	
26.0												
0.00	.233E+04	0.00	.130E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.363E+04	
36.8												
0.00	0.00	.236E+04	.290E+04	.257E+04	0.00	0.00	0.00	0.00	0.00	0.00	.785E+04	
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
.689E+04	.467E+04	.286E+04	.482E+04	.389E+04	110.	151.	227.	0.00	382.	.141E+04	.266E+05	

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
.659E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.659E-02	
3.25												
1.11	0.00	.790E-01	0.00	0.00	0.00	0.00	0.00	0.00	.217	.372	1.77	
4.60												
1.89	.211	.135	.856E-01	0.00	.823E-01	0.00	.102	0.00	0.00	1.07	3.54	
6.50												
3.45	.863	.267	0.00	.588	0.00	0.00	0.00	0.00	0.00	.952	6.11	
9.19												
8.36	0.00	0.00	.593	0.00	.329	.566	0.00	0.00	.362	2.03	12.2	
13.0												
11.7	1.83	0.00	0.00	0.00	0.00	0.00	.751	0.00	.656	.873	16.0	
18.4												
6.86	5.89	1.35	1.68	1.34	0.00	0.00	0.00	0.00	0.00	0.00	17.1	
26.0												
0.00	0.76	0.00	4.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.6	
36.8												
0.00	0.00	8.94	10.9	9.68	0.00	0.00	0.00	0.00	0.00	0.00	29.5	
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
33.4	17.6	10.8	18.1	11.6	.412	.566	.853	0.00	1.44	5.29	100.0	

TABLE 16.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-5. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	18.4	0.00	0.00	0.00	0.00	0.00	0.00	7.88	0.00	0.00	9.64	35.9
4.60	168.	13.1	0.00	0.00	15.8	0.00	0.00	0.00	0.00	15.8	162.	315.
6.50	470.	0.00	59.6	35.9	0.00	0.00	35.9	0.00	0.00	97.2	928.	.163E+04
9.19	574.	122.	191.	126.	52.6	0.00	0.00	0.00	0.00	143.	.158E+04	.271E+04
13.0	.111E+04	525.	146.	0.00	238.	0.00	0.00	237.	234.	92.0	.175E+04	.434E+04
18.4	.153E+04	.135E+04	464.	0.00	270.	198.	285.	0.00	0.00	282.	.137E+04	.574E+04
26.0	.188E+04	.187E+04	.185E+04	0.00	0.00	0.00	394.	0.00	499.	576.	.166E+04	.704E+04
36.8	0.00	732.	0.00	0.00	0.00	.241E+04	0.00	.329E+04	0.00	.394E+04	.523E+04	.156E+05
52.0	0.00	0.00	0.00	0.00	0.00	.166E+04	0.00	0.00	0.00	.488E+04	.387E+04	.953E+04
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.126E+05	.356E+04	.162E+05
104.	0.00	0.00	0.00	0.00	0.00	.131E+05	0.00	0.00	0.00	0.00	.661E+04	.197E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.483E+04	.382E+04	.275E+04	162.	576.	.173E+05	715.	.353E+04	643.	.218E+05	.267E+05	.828E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.222E-01	0.00	0.00	0.00	0.00	0.00	0.00	.952E-02	0.00	0.00	.116E-01	.434E-01
4.60	.138	.159E-01	0.00	0.00	.190E-01	0.00	0.00	0.00	0.00	.190E-01	.196	.388
6.50	.567	0.00	.720E-01	.434E-01	0.00	0.00	.434E-01	0.00	0.00	.117	1.12	1.96
9.19	.693	.147	.231	.152	.635E-01	0.00	0.00	0.00	0.00	.172	1.81	3.27
13.0	1.35	.634	.177	0.00	.266	0.00	0.00	.287	.283	.111	2.11	5.24
18.4	1.84	1.63	.561	0.00	.326	.239	.344	0.00	0.00	.341	1.65	6.94
26.0	1.23	1.29	2.28	0.00	0.00	0.00	.476	0.00	.494	.695	2.93	8.58
36.8	0.00	.685	0.00	0.00	0.00	2.92	0.00	3.97	0.00	4.76	6.31	18.6
52.0	0.00	0.00	0.00	0.00	0.00	2.01	0.00	0.00	0.00	4.83	4.67	11.5
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.2	4.30	19.5
104.	0.00	0.00	0.00	0.00	0.00	15.8	0.00	0.00	0.00	0.00	7.98	23.8
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.83	4.61	3.32	.196	.696	20.9	.664	4.87	.777	26.3	32.2	100.0

TABLE 17.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-5. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	9.61	.659	.732E-01	.878	0.00	0.00	0.00	0.00	0.00	0.00	2.64	14.1
4.68	5.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	8.13
6.56	3.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.07	8.86
9.19	6.44	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.44
13.0	21.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	21.9
18.4	0.00	0.00	0.00	0.00	0.00	15.4	0.00	25.2	0.00	0.00	0.00	40.6
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	[illegible]	0.00
	49.0	.659	.732E-01	.878	0.00	15.4	0.00	25.2	0.00	0.00	8.71	100.0

TABLE 18.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-5. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	41.0	0.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.0	64.0
4.60	484.	39.0	53.0	35.0	17.0	20.0	0.00	0.00	28.0	123.	.158E+04	.238E+04
6.50	.178E+04	312.	141.	388.	126.	61.0	100.	0.00	0.00	272.	.598E+04	.989E+04
9.19	.315E+04	.123E+04	790.	272.	0.00	352.	337.	252.	190.	784.	.683E+04	.162E+05
13.0	.446E+04	.216E+04	852.	337.	671.	668.	355.	532.	.105E+04	.112E+04	.124E+05	.246E+05
18.4	.658E+04	.538E+04	.327E+04	.215E+04	.132E+04	746.	485.	582.	.110E+04	.398E+04	.147E+05	.403E+05
26.0	.714E+04	.103E+05	.491E+04	.228E+04	.153E+04	.147E+04	.113E+04	.298E+04	.196E+04	.755E+04	.226E+05	.619E+05
36.8	.191E+04	.527E+04	.952E+04	.618E+04	933.	.161E+04	.188E+04	.353E+04	.189E+04	.169E+05	.291E+05	.698E+05
52.0	0.00	.454E+04	.672E+04	.758E+04	.491E+04	.761E+04	.195E+04	.574E+04	.478E+04	.453E+05	.192E+05	.106E+06
73.5	0.00	.289E+04	0.00	.748E+04	0.00	.768E+04	0.00	.314E+04	0.00	.466E+05	.856E+04	.763E+05
104.	0.00	0.00	0.00	.635E+04	0.00	0.00	0.00	0.00	.868E+04	.449E+05	.224E+05	.826E+05
147.	0.00	0.00	0.00	0.00	0.00	.127E+05	0.00	0.00	0.00	.479E+05	0.00	.606E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.606E+05	0.00	.606E+05
	.256E+05	.321E+05	.263E+05	.331E+05	.951E+04	.329E+05	.624E+04	.167E+05	.196E+05	.276E+06	.136E+06	.615E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.667E-02	0.00	.488E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.325E-02	.104E-01
4.60	.708E-01	.635E-02	.668E-02	.578E-02	.277E-02	.325E-02	0.00	0.00	.456E-02	.298E-01	.257	.387
6.50	.290	.508E-01	.229E-01	.501E-01	.205E-01	.993E-02	.176E-01	0.00	0.00	.443E-01	.973	1.48
9.19	.513	.200	.129	.443E-01	0.00	.573E-01	.540E-01	.418E-01	.309E-01	.128	1.44	2.63
13.0	.726	.351	.139	.548E-01	.109	.109	.578E-01	.866E-01	.171	.182	2.01	4.00
18.4	1.07	.876	.532	.350	.214	.121	.789E-01	.947E-01	.179	.648	2.29	6.56
26.0	1.16	1.67	.799	.372	.249	.248	.184	.484	.319	1.23	3.68	10.4
36.8	.311	.858	1.55	1.81	.152	.262	.306	.575	.308	2.76	3.27	11.4
52.0	0.00	.740	1.09	1.22	.799	1.24	.317	.934	.764	7.38	3.12	17.6
73.5	0.00	.471	0.00	1.22	0.00	1.25	0.00	.510	0.00	7.58	1.39	12.4
104.	0.00	0.00	0.00	1.07	0.00	0.00	0.00	0.00	1.41	7.31	3.65	13.4
147.	0.00	0.00	0.00	0.00	0.00	2.07	0.00	0.00	0.00	7.79	0.00	9.86
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.87	0.00	9.87
	4.16	5.23	4.27	5.38	1.55	5.36	1.02	2.73	3.19	44.9	22.2	100.

TABLE 19.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-6. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	22.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	67.0	89.0
4.60	125.	45.0	0.00	37.0	0.00	9.00	0.00	0.00	25.0	54.0	.151E+04	.188E+04
6.50	678.	216.	22.0	77.0	92.0	0.00	34.0	0.00	0.00	251.	.368E+04	.505E+04
9.19	.106E+04	227.	206.	0.00	138.	43.0	166.	107.	0.00	558.	.649E+04	.908E+04
13.0	995.	.148E+04	434.	0.00	942.	0.00	101.	568.	486.	.169E+04	.496E+04	.117E+05
18.4	.196E+04	.144E+04	.125E+04	.161E+04	0.00	208.	0.00	292.	.165E+04	521.	.662E+04	.156E+05
26.0	.149E+04	988.	.268E+04	.124E+04	544.	.212E+04	0.00	941.	.162E+04	.317E+04	.124E+05	.271E+05
36.8	0.00	0.00	.237E+04	.102E+04	0.00	0.00	681.	.264E+04	0.00	.429E+04	.488E+04	.158E+05
52.0	0.00	0.00	.221E+04	.231E+04	0.00	.192E+04	.331E+04	0.00	.569E+04	.396E+04	.371E+04	.231E+05
73.5	0.00	0.00	0.00	0.00	.273E+04	0.00	.522E+04	.357E+04	0.00	0.00	0.00	.115E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.633E+04	.432E+04	.918E+04	.629E+04	.445E+04	.438E+04	.952E+04	.829E+04	.947E+04	.145E+05	.442E+05	.121E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.102E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.355E-01	.737E-01
4.60	.103	.373E-01	0.00	.306E-01	0.00	0.00	0.00	0.00	.207E-01	.447E-01	1.25	1.49
6.50	.561	.179	.102E-01	.637E-01	.768E-01	0.00	.281E-01	0.00	0.00	.298	3.05	4.18
9.19	.879	.108	.171	0.00	.114	.356E-01	.137	.155	0.00	.462	5.37	7.51
13.0	.824	1.23	.359	0.00	.780	0.00	.636E-01	.470	.402	1.40	4.11	9.66
18.4	1.62	1.19	1.04	1.33	0.00	.172	0.00	.242	1.37	.431	5.48	12.9
26.0	1.23	.752	2.22	1.03	.450	1.76	0.00	.779	1.34	2.62	10.3	22.5
36.8	0.00	0.00	1.97	.844	0.00	0.00	.564	2.19	0.00	3.55	3.97	13.1
52.0	0.00	0.00	1.83	1.91	0.00	1.59	2.74	0.00	4.71	3.28	3.07	19.1
73.5	0.00	0.00	0.00	0.00	2.26	0.00	4.33	2.95	0.00	0.00	0.00	9.54
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.24	3.57	7.68	5.21	3.68	3.56	7.68	6.78	7.84	12.8	36.6	100.0

TABLE 20.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-6. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.23	9.07	.441	0.00	0.00	0.00	0.00	0.00	0.00	.176	0.00	5.29	14.9
4.60	8.72	0.00	.529	.793	0.00	0.00	0.00	0.00	0.00	0.00	2.51	12.6
6.50	7.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.969	8.06
9.19	20.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.00	2.33	25.6
13.0	10.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.49	15.0
18.4	0.00	15.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.06	23.9
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	55.7	16.3	.529	.793	0.00	0.00	0.00	0.00	.176	3.00	23.6	100.

TABLE 21.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-6. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	21.0	0.00	1.000	9.00	0.00	0.00	0.00	0.00	0.00	0.00	60.0	91.0
4.60	891.	105.	94.0	39.0	0.00	16.0	0.00	20.0	16.0	75.0	.210E+04	.344E+04
6.50	.181E+04	538.	230.	145.	179.	197.	65.0	0.00	49.0	453.	.689E+04	.106E+05
9.19	.347E+04	.112E+04	597.	70.0	482.	447.	352.	254.	57.0	842.	.951E+04	.172E+05
13.0	.528E+04	.312E+04	.110E+04	.125E+04	416.	231.	953.	389.	600.	550.	.117E+05	.257E+05
18.4	.458E+04	.355E+04	.359E+04	914.	455.	651.	.124E+04	.119E+04	.323E+04	.316E+04	.156E+05	.382E+05
26.0	.556E+04	.887E+04	.335E+04	.425E+04	.372E+04	.261E+04	839.	.387E+04	.449E+04	.628E+04	.214E+05	.645E+05
36.8	812.	.676E+04	.877E+04	.591E+04	.419E+04	930.	891.	.515E+04	.670E+04	.177E+05	.232E+05	.811E+05
52.0	0.00	.463E+04	.868E+04	.595E+04	.562E+04	.638E+04	.159E+04	.390E+04	.659E+04	.342E+05	.170E+05	.945E+05
73.5	0.00	.285E+04	.306E+04	.238E+04	.483E+04	.770E+04	.857E+04	.375E+04	.132E+05	.727E+05	.288E+05	.140E+06
104.	0.00	.543E+04	0.00	.621E+04	0.00	0.00	.137E+05	.782E+04	.157E+05	.413E+05	0.00	.901E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.368E+05	0.00	.368E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.228E+05	0.00	0.00	.228E+05
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.224E+05	.362E+05	.296E+05	.277E+05	.199E+05	.192E+05	.283E+05	.263E+05	.735E+05	.214E+06	.128E+06	.625E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.336E-02	0.00	.160E-03	.144E-02	0.00	0.00	0.00	0.00	0.00	0.00	.959E-02	.146E-01
4.60	.142	.168E-01	.158E-01	.624E-02	0.00	.256E-02	0.00	.320E-02	.256E-02	.120E-01	.349	.549
6.50	.289	.860E-01	.381E-01	.232E-01	.286E-01	.315E-01	.104E-01	0.00	.703E-02	.724E-01	1.10	1.69
9.19	.554	.179	.955E-01	.112E-01	.771E-01	.715E-01	.563E-01	.406E-01	.911E-02	.135	1.52	2.75
13.0	.845	.498	.188	.200	.665E-01	.369E-01	.152	.622E-01	.109	.879E-01	1.86	4.11
18.4	.733	.568	.574	.146	.720E-01	.104	.198	.190	.517	.506	2.50	6.10
26.0	.890	1.29	.536	.680	.595	.418	.144	.618	.719	1.00	3.43	10.3
36.8	.130	1.00	1.40	.946	.670	.149	.142	.823	1.07	2.83	3.72	13.0
52.0	0.00	.741	1.39	.951	.899	1.02	.254	.624	1.05	5.46	2.71	15.1
73.5	0.00	.455	.489	.477	.773	1.23	1.37	.599	2.11	11.6	3.33	22.5
104.	0.00	.867	0.00	.994	0.00	0.00	2.19	1.25	2.51	6.60	0.00	14.4
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.89	0.00	5.89
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.65	0.00	0.00	3.65
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	3.59	5.78	4.73	4.43	3.18	3.06	4.52	4.21	11.7	34.2	20.5	100.

TABLE 22.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-7. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
3.25												
	147.	15.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	166.	.114E+04	.146E+04
4.60												
	301.	76.0	30.0	107.	0.00	106.	36.0	41.0	0.00	135.	.333E+04	.423E+04
6.50												
	.131E+04	252.	149.	0.00	0.00	165.	187.	131.	0.00	725.	.399E+04	.691E+04
9.19												
	586.	728.	0.00	94.0	258.	265.	299.	797.	822.	.185E+04	.834E+04	.132E+05
13.0												
	.215E+04	413.	0.00	883.	172.	456.	587.	883.	.138E+04	787.	.681E+04	.144E+05
18.4												
	.146E+04	.117E+04	0.00	.141E+04	0.00	0.00	595.	0.00	.158E+04	.284E+04	.452E+04	.128E+05
26.0												
	761.	0.00	0.00	.194E+04	.234E+04	.102E+04	0.00	988.	.109E+04	.111E+05	.398E+04	.232E+05
36.8												
	0.00	.152E+04	0.00	.197E+04	.182E+04	0.00	0.00	0.00	0.00	.120E+05	0.00	.173E+05
52.0												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.122E+05	0.00	.122E+05
73.5												
	0.00	0.00	0.00	0.00	0.00	0.00	.654E+04	0.00	0.00	.545E+04	.621E+04	.182E+05
104.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.671E+04	.418E+04	241.	.648E+04	.468E+04	.281E+04	.824E+04	.275E+04	.487E+04	.456E+05	.384E+05	.124E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.532E-01	.532E-01
3.25												
	.119	.121E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.134	.917	1.18
4.60												
	.243	.613E-01	.742E-01	.863E-01	0.00	.855E-01	.307E-01	.331E-01	0.00	.109	2.69	3.41
6.50												
	1.06	.203	.120	0.00	0.00	.133	.151	.106	0.00	.585	3.22	5.57
9.19												
	.473	.587	0.00	.758E-01	.208	.214	.241	.643	.663	.858	6.72	10.7
13.0												
	1.73	.333	0.00	.712	.139	.368	.473	.648	1.11	.578	5.38	11.6
18.4												
	1.18	.941	0.00	1.14	0.00	0.00	.480	0.00	1.28	1.65	3.64	10.3
26.0												
	.614	0.00	0.00	1.56	1.89	.824	0.00	.758	.876	8.94	3.21	18.7
36.8												
	0.00	1.23	0.00	1.59	1.47	0.00	0.00	0.00	0.00	9.68	0.00	14.0
52.0												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.87	0.00	9.87
73.5												
	0.00	0.00	0.00	0.00	0.00	0.00	5.27	0.00	0.00	4.48	5.01	14.7
104.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.												
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.41	3.37	.194	5.16	3.71	1.62	6.65	2.22	3.93	36.0	31.0	100.0

TABLE 23.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-7. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	4.95	.550	0.00	0.00	0.00	0.00	0.00	0.00	.931	0.00	3.26	9.69
4.60	5.00	2.28	.677	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.465	6.50
6.50	4.65	0.00	0.00	0.00	1.18	0.00	0.00	0.00	0.00	0.00	13.3	19.1
9.19	2.03	1.82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.20	6.05
13.0	27.7	8.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	36.3
18.4	0.00	10.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.48	0.00	20.3
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	44.5	24.1	.677	0.00	1.18	0.00	0.00	0.00	.931	9.48	19.2	100.

B.

TABLE 24.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-7. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
.876	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.7	38.5
3.25												
253.	15.8	21.8	0.00	21.0	16.6	0.00	0.00	0.00	18.4	746.	.109E+04
4.60												
494.	175.	191.	186.	42.1	0.00	52.6	0.00	0.00	113.	.231E+04	.338E+04
6.58												
486.	327.	247.	138.	48.9	282.	73.6	123.	0.00	71.8	.378E+04	.549E+04
9.19												
381.	644.	356.	168.	197.	114.	146.	252.	396.	283.	.344E+04	.644E+04
13.0												
174.	666.	686.	221.	219.	0.00	189.	288.	318.	.183E+04	.347E+04	.739E+04
18.4												
498.	0.00	491.	868.	0.00	376.	417.	0.00	824.	.174E+04	.784E+04	.122E+05
26.0												
0.00	0.00	0.00	0.00	0.00	881.	0.00	0.00	0.00	863.	.165E+04	.332E+04
36.8												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.344E+04	.136E+04	.488E+04
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.229E+04	.223E+04	.198E+04	.143E+04	522.	.151E+04	879.	583.	.154E+04	.755E+04	.238E+05	.442E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
.198E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.852E-01	.872E-01
3.25												
.573	.357E-01	.476E-01	0.00	.476E-01	.377E-01	0.00	0.00	0.00	.416E-01	1.69	2.47
4.60												
1.09	.356	.828	.848	.952E-01	0.00	.119	0.00	0.00	.256	5.23	7.66
6.58												
1.10	.739	.559	.311	.971E-01	.456	.167	.278	0.00	.163	6.56	10.4
9.19												
.862	1.91	.885	.844	.446	.258	.331	.571	.896	.648	7.79	14.6
13.0												
.395	1.96	1.35	.580	.496	0.00	.428	.478	.728	2.33	7.86	16.7
18.4												
1.13	0.00	1.11	1.95	0.00	.858	.944	0.00	1.86	3.93	15.9	27.7
26.0												
0.00	0.00	0.00	0.00	0.00	1.81	0.00	0.00	0.00	1.95	3.74	7.51
36.8												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.78	3.07	10.9
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.97	5.04	4.30	3.24	1.10	3.42	1.99	1.32	3.48	17.1	54.8	100.0

TABLE 25.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-8. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	8.76	0.00	17.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.5	36.8
4.68	46.4	0.00	0.00	0.00	29.2	0.00	0.00	0.00	13.1	15.8	547.	642.
6.50	35.0	33.3	110.	39.4	0.00	0.00	0.00	0.00	0.00	41.2	.152E+04	.178E+04
9.19	83.2	176.	110.	0.00	124.	64.8	0.00	125.	64.8	166.	.161E+04	.252E+04
13.0	0.00	165.	238.	0.00	157.	0.00	122.	0.00	129.	87.6	.223E+04	.312E+04
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.369E+04	.369E+04
26.0	0.00	0.00	343.	0.00	0.00	436.	0.00	0.00	864.	473.	.288E+04	.419E+04
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.142E+04	.152E+04	.294E+04
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	173.	368.	818.	39.4	381.	501.	122.	125.	.187E+04	.221E+04	.132E+05	.189E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.463E-01	0.00	.925E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.555E-01	.194
4.68	.245	0.00	0.00	0.00	.106	0.00	0.00	0.00	.694E-01	.833E-01	2.89	3.39
6.50	.185	.176	.578	.208	0.00	0.00	0.00	0.00	0.00	.217	8.05	9.41
9.19	.440	.698	.578	0.00	.657	.342	0.00	.662	.342	.875	8.51	13.3
13.0	0.00	.870	1.26	0.00	.828	0.00	.643	0.00	.680	.463	11.6	16.5
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.5	19.5
26.0	0.00	0.00	1.81	0.00	0.00	2.30	0.00	0.00	4.56	2.50	11.0	22.2
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.51	8.03	15.5
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.916	1.94	4.32	.208	1.59	2.65	.643	.662	5.65	11.6	69.6	100.0

TABLE 26.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-8. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
2.97		.175	0.00	0.00	0.00	0.00	0.00	0.00	.525	1.05	8.22	12.9
3.25	0.00	1.14	0.00	1.31	0.00	0.00	0.00	0.00	0.00	0.00	4.55	7.00
4.68	9.89	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.19	19.1
6.58	4.29	0.00	4.29	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.57
9.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.36	0.00	0.00	9.80	19.2
13.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	33.2	0.00	33.2
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
296.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	17.1	1.31	4.29	1.31	0.00	0.00	0.00	9.36	.525	34.3	31.8	100.0

TABLE 27.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-8. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	41.0	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.0
4.60	613.	21.0	0.00	17.0	54.0	0.00	0.00	0.00	0.00	[illegible]	[illegible]	706.
6.50	.836E+04	479.	216.	82.0	78.0	71.0	36.0	0.00	0.00	129.	.118E+04	.464E+04
9.19	.421E+04	.106E+04	586.	486.	129.	78.0	173.	46.0	0.00	167.	.139E+04	.818E+04
13.0	.658E+04	.338E+04	.146E+04	565.	370.	358.	318.	0.00	0.00	0.00	.237E+04	.152E+05
18.4	.873E+04	.716E+04	.301E+04	.133E+04	675.	538.	930.	347.	0.00	560.	.152E+04	.258E+05
26.0	.876E+04	.136E+05	.919E+04	.706E+04	672.	646.	.147E+04	366.	.213E+04	.181E+04	.199E+04	.469E+05
36.8	.296E+04	.970E+04	.728E+04	.452E+04	.635E+04	.168E+04	.182E+04	.193E+04	713.	.179E+04	.554E+04	.442E+05
52.0	0.00	.751E+04	.520E+04	.482E+04	.111E+05	.152E+04	.222E+04	.505E+04	0.00	.226E+04	.139E+04	.411E+05
73.5	0.00	.356E+04	.591E+04	.681E+04	0.00	.349E+04	0.00	0.00	.566E+04	0.00	0.00	.254E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.348E+05	.465E+05	.327E+05	.256E+05	.193E+05	.038E+04	.697E+04	.794E+04	.858E+04	.698E+04	.156E+05	.212E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.194E-01	.478E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.241E-01
4.60	.289	.992E-02	0.00	.883E-02	.255E-01	0.00	0.00	0.00	0.00	.348E-01	.101	.467
6.50	1.12	.226	.102	.387E-01	.368E-01	.335E-01	.170E-01	0.00	0.00	.609E-01	.568	2.19
9.19	1.99	.542	.239	.192	.609E-01	.368E-01	.817E-01	.217E-01	0.00	.783E-01	.639	3.86
13.0	3.07	1.56	.688	.262	.175	.169	.150	0.00	0.00	0.00	1.12	7.19
18.4	4.12	3.38	1.42	.628	.319	.254	.443	.256	0.00	.264	.717	11.8
26.0	4.14	6.45	4.34	3.34	.317	.385	.693	.173	1.01	.477	.941	22.2
36.8	1.48	4.58	3.48	2.13	3.00	.793	.859	.912	.337	.847	2.62	20.9
52.0	0.00	3.55	2.45	2.87	5.26	.718	1.05	2.39	0.00	1.07	.658	19.4
73.5	0.00	1.68	2.79	3.22	0.00	1.65	0.00	0.00	2.67	0.00	0.00	12.0
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	16.1	21.9	15.4	12.1	9.19	3.96	3.29	3.75	4.02	2.83	7.37	100.0

TABLE 28.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-9. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.00	6.00	25.0
3.25												
110.	52.0	21.0	0.00	0.00	0.00	10.0	0.00	13.0	16.0	900.	.115E+04	
4.60												
555.	330.	174.	62.0	65.0	32.0	0.00	0.00	58.0	250.	.270E+04	.423E+04	
6.50												
.103E+04	436.	292.	67.0	670.	119.	74.0	261.	0.00	435.	.493E+04	.633E+04	
9.19												
.155E+04	734.	338.	450.	500.	142.	244.	624.	234.	.127E+04	.534E+04	.114E+05	
13.0												
.172E+04	.167E+04	.121E+04	230.	0.00	617.	637.	273.	941.	.127E+04	.867E+04	.172E+05	
18.4												
0.00	611.	0.00	.101E+04	339.	.157E+04	0.00	848.	.109E+04	.277E+04	.846E+04	.167E+05	
26.0												
0.00	0.00	0.00	.199E+04	.248E+04	.108E+04	0.00	.222E+04	.157E+04	.459E+04	.115E+05	.254E+05	
36.8												
0.00	0.00	0.00	.259E+04	0.00	.669E+04	.328E+04	0.00	.167E+04	.104E+05	.127E+05	.373E+05	
52.0												
0.00	0.00	.297E+04	0.00	0.00	0.00	0.00	.861E+04	.288E+04	.338E+04	.888E+04	.266E+05	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.754E+04	.754E+04	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
.498E+04	.383E+04	.508E+04	.641E+04	.406E+04	.102E+05	.425E+04	.128E+05	.846E+04	.243E+05	.716E+05	.156E+06	

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
.641E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.577E-02	.385E-02	.160E-01	
3.25												
.757E-01	.334E-01	.135E-01	0.00	0.00	0.00	.115E-01	0.00	.834E-02	.103E-01	.582	.735	
4.60												
.356	.212	.112	.398E-01	.417E-01	.285E-01	0.00	0.00	.372E-01	.165	1.73	2.71	
6.50												
.663	.280	.187	.430E-01	.435	.763E-01	.475E-01	.167	0.00	.279	3.16	5.34	
9.19												
.992	.471	.217	.289	.321	.911E-01	.156	.400	.150	.815	3.42	7.32	
13.0												
1.10	1.07	.774	.153	0.00	.396	.409	.175	.604	.811	5.56	11.1	
18.4												
0.00	.392	0.00	.650	.217	1.01	0.00	.544	.598	1.78	5.43	10.7	
26.0												
0.00	0.00	0.00	1.28	1.59	.691	0.00	1.42	1.01	2.94	7.38	16.3	
36.8												
0.00	0.00	0.00	1.66	0.00	4.29	2.10	0.00	1.07	6.64	8.14	23.9	
52.0												
0.00	0.00	1.90	0.00	0.00	0.00	0.00	5.52	1.85	2.12	5.64	17.0	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.84	4.84	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
3.20	2.46	3.20	4.11	2.60	6.57	2.73	8.23	5.43	15.6	45.9	100.0	

TABLE 29.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-9. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
7.82	.152	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.09	10.1
3.25											
6.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	3.95	11.1
4.68											
3.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.24	5.62
6.50											
11.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.13	13.1
9.19											
5.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.11	11.7
13.0											
9.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.2	0.00	20.3
18.4											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0											
0.00	0.00	0.00	0.00	28.2	0.00	0.00	0.00	0.00	0.00	0.00	28.2
36.8											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43.0	.152	0.00	0.00	28.2	0.00	0.00	0.00	0.00	12.2	16.5	100.

TABLE 30.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-9. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	19.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.5	36.8
4.60	390.	74.5	51.7	35.0	14.9	15.8	29.2	0.00	21.0	0.00	817.	.144E+04
6.50	806.	365.	144.	84.1	99.0	69.2	63.1	0.00	42.1	117.	.359E+04	.538E+04
9.19	.181E+04	882.	183.	310.	122.	127.	240.	212.	78.0	131.	.482E+04	.892E+04
13.0	.234E+04	.166E+04	.126E+04	887.	144.	506.	127.	210.	795.	733.	.672E+04	.154E+05
18.4	.114E+04	.313E+04	.174E+04	692.	939.	809.	272.	882.	.148E+04	.158E+04	.569E+04	.183E+05
26.0	.338E+04	.349E+04	.185E+04	.128E+04	.154E+04	614.	585.	.138E+04	.288E+04	.422E+04	.879E+04	.298E+05
36.8	0.00	.271E+04	.187E+04	.132E+04	0.00	0.00	.226E+04	.284E+04	0.00	.898E+04	.327E+04	.224E+05
52.0	0.00	0.00	.363E+04	0.00	.286E+04	.285E+04	0.00	.226E+04	.438E+04	.538E+04	.371E+04	.213E+05
73.5	0.00	0.00	.339E+04	0.00	0.00	0.00	.301E+04	0.00	0.00	.188E+05	0.00	.172E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.946E+04	0.00	.946E+04
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.123E+05	0.00	.123E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.981E+04	.123E+05	.134E+05	.453E+04	.572E+04	.419E+04	.654E+04	.698E+04	.669E+04	.536E+05	.373E+05	.161E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.120E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.109E-01	.228E-01
4.60	.242	.462E-01	.321E-01	.218E-01	.925E-02	.979E-02	.125E-01	0.00	.131E-01	0.00	.507	.894
6.50	.500	.227	.892E-01	.522E-01	.615E-01	.438E-01	.392E-01	0.00	.261E-01	.723E-01	2.23	3.34
9.19	1.13	.548	.114	.193	.756E-01	.789E-01	.149	.132	.484E-01	.810E-01	2.99	5.54
13.0	1.46	1.03	.779	.550	.892E-01	.314	.789E-01	.131	.494	.455	4.17	9.55
18.4	.706	1.94	1.00	.438	.583	.582	.169	.548	.929	.982	3.48	11.3
26.0	2.05	2.17	.652	.744	.956	.381	.313	.856	1.79	2.62	5.46	18.8
36.8	0.00	1.68	1.16	.819	0.00	0.00	1.40	1.26	0.00	5.58	2.03	13.9
52.0	0.00	0.00	2.29	0.00	1.78	1.27	0.00	1.41	.859	3.29	2.38	13.2
73.5	0.00	0.00	2.10	0.00	0.00	0.00	1.87	0.00	0.00	6.71	0.00	10.7
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.87	0.00	5.87
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.64	0.00	7.64
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	6.09	7.64	8.30	2.81	3.55	2.68	4.03	4.33	4.15	33.3	23.2	100.0

TABLE 31.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-10. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	20.2	20.9
4.60	114.	20.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.4	576.	722.
6.50	291.	175.	34.2	54.3	68.3	0.00	0.00	0.00	0.00	163.	.147E+04	.228E+04
9.19	312.	236.	0.00	92.9	0.00	0.00	124.	256.	0.00	350.	.387E+04	.444E+04
13.0	242.	223.	92.9	195.	126.	141.	0.00	0.00	248.	384.	.316E+04	.481E+04
18.4	189.	0.00	559.	0.00	264.	284.	0.00	0.00	481.	244.	.489E+04	.593E+04
26.0	499.	377.	0.00	627.	0.00	0.00	0.00	367.	.144E+04	.100E+04	.277E+04	.708E+04
36.8	887.	0.00	0.00	0.00	0.00	0.00	0.00	746.	0.00	773.	.298E+04	.539E+04
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.172E+04	0.00	0.00	.172E+04
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.254E+04	.103E+04	686.	970.	450.	345.	124.	.137E+04	.380E+04	.295E+04	.181E+05	.324E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.278E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.622E-01	.892E-01
4.60	.351	.622E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.351E-01	1.78	2.23
6.50	.897	.541	.105	.168	.211	0.00	0.00	0.00	0.00	.565	4.35	7.03
9.19	.962	.727	0.00	.287	0.00	0.00	.384	.789	0.00	1.08	9.46	13.7
13.0	.746	.687	.287	.603	.389	.435	0.00	0.00	.765	1.18	9.75	14.8
18.4	.584	0.00	1.72	0.00	.814	.638	0.00	0.00	1.24	.754	12.6	18.4
26.0	1.54	1.16	0.00	1.94	0.00	0.00	0.00	1.13	4.43	3.09	8.34	21.8
36.8	2.74	0.00	0.00	0.00	0.00	0.00	0.00	2.30	0.00	2.30	9.20	16.6
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.30	0.00	0.00	5.30
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	7.84	3.18	2.12	2.99	1.41	1.06	.384	4.22	11.7	9.09	56.0	100.0

TABLE 32.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-10. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	14.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.640	.914	15.2	38.9
4.60	8.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.55	9.69
6.50	18.4	2.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.04	28.2
9.19	21.2	4.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.21	31.2
13.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	61.9	7.59	0.00	0.00	0.00	0.00	0.00	0.00	.640	.914	29.0	100.0

TABLE 33.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-10. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	6.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	30.0	36.0
4.60	496.	77.0	0.00	19.0	39.0	0.00	0.00	0.00	21.0	29.0	630.	.131E+04
6.50	.197E+04	323.	211.	107.	95.0	29.0	37.0	67.0	0.00	111.	.188E+04	.483E+04
9.19	.326E+04	.136E+04	409.	171.	191.	187.	56.0	127.	57.0	203.	.231E+04	.834E+04
13.0	.742E+04	.268E+04	.125E+04	.113E+04	169.	249.	116.	229.	93.0	275.	.285E+04	.153E+05
18.4	.743E+04	.878E+04	.276E+04	748.	438.	298.	273.	0.00	525.	694.	.218E+04	.241E+05
26.0	.496E+04	.131E+05	.518E+04	.612E+04	.285E+04	.124E+04	636.	0.00	.133E+04	0.00	.254E+04	.379E+05
36.8	853.	.117E+05	.624E+04	.972E+04	.513E+04	.320E+04	0.00	.114E+04	.315E+04	.242E+04	.217E+04	.457E+05
52.0	0.00	.625E+04	.395E+04	.189E+05	.603E+04	.412E+04	.421E+04	.136E+04	.198E+04	.628E+04	.363E+04	.486E+05
73.5	0.00	0.00	.318E+04	.185E+05	.134E+05	.601E+04	.767E+04	0.00	.617E+04	.492E+04	.377E+04	.556E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.620E+04	0.00	.620E+04
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.149E+05	0.00	.149E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.268E+05	.442E+05	.232E+05	.394E+05	.283E+05	.153E+05	.130E+05	.292E+04	.132E+05	.360E+05	.212E+05	.263E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.228E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.114E-01	.137E-01
4.60	.189	.293E-01	0.00	.723E-02	.148E-01	0.00	0.00	0.00	.799E-02	.110E-01	.240	.499
6.50	.749	.123	.803E-01	.407E-01	.361E-01	.110E-01	.141E-01	.255E-01	0.00	.422E-01	.715	1.84
9.19	1.24	.519	.156	.651E-01	.727E-01	.712E-01	.213E-01	.483E-01	.217E-01	.772E-01	.878	3.17
13.0	2.67	1.02	.476	.429	.719E-01	.947E-01	.441E-01	.871E-01	.354E-01	.105	.782	5.81
18.4	2.83	3.34	1.05	.265	.167	.113	.104	0.00	.200	.264	.831	9.18
26.0	1.89	4.98	1.97	2.33	1.89	.473	.242	0.00	.506	0.00	.966	14.4
36.8	.325	4.44	2.37	3.70	1.95	1.22	0.00	.433	1.20	.919	.825	17.4
52.0	0.00	2.38	1.50	4.13	2.38	1.57	1.60	.516	.785	2.39	1.38	18.5
73.5	0.00	0.00	1.21	4.81	5.08	2.29	2.92	0.00	2.35	1.87	1.44	21.2
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.36	0.00	2.36
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.65	0.00	5.65
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	9.89	16.8	8.82	15.0	10.8	5.84	4.95	1.11	5.04	13.7	8.87	100.

TABLE 34.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-11. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	90.0	90.0
4.60	180.	16.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	97.0	900.	.119E+04
6.50	703.	89.0	30.0	0.00	49.0	100.0	105.	0.00	0.00	193.	.442E+04	.569E+04
9.19	.114E+04	197.	239.	50.0	52.0	46.0	199.	43.0	0.00	192.	.560E+04	.776E+04
13.0	.147E+04	648.	341.	413.	123.	160.	0.00	0.00	129.	434.	.585E+04	.956E+04
18.4	.163E+04	.114E+04	269.	978.	0.00	264.	515.	303.	169.	721.	.981E+04	.158E+05
26.0	.141E+04	.306E+04	897.	562.	0.00	.231E+04	0.00	584.	.109E+04	.306E+04	.925E+04	.222E+05
36.8	0.00	0.00	.229E+04	.189E+04	.460E+04	.273E+04	0.00	0.00	0.00	.659E+04	.442E+04	.225E+05
52.0	0.00	0.00	0.00	0.00	.443E+04	0.00	0.00	0.00	0.00	.888E+04	.529E+04	.186E+05
73.5	0.00	0.00	0.00	0.00	.385E+04	0.00	.283E+04	0.00	0.00	.110E+05	.205E+05	.381E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.131E+05	0.00	.131E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.653E+04	.515E+04	.407E+04	.389E+04	.131E+05	.560E+04	.365E+04	930.	.139E+04	.443E+05	.661E+05	.155E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.582E-01	.582E-01
4.60	.116	.183E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.627E-01	.582	.771
6.50	.455	.575E-01	.194E-01	0.00	.317E-01	.647E-01	.679E-01	0.00	0.00	.125	2.06	3.68
9.19	.736	.127	.155	.323E-01	.336E-01	.297E-01	.129	.270E-01	0.00	.124	3.62	5.02
13.0	.949	.419	.220	.267	.795E-01	.183	0.00	0.00	.834E-01	.281	3.78	6.18
18.4	1.05	.734	.174	.632	0.00	.171	.333	.196	.189	.466	6.35	10.2
26.0	.912	1.98	.580	.363	0.00	1.49	0.00	.378	.784	1.98	5.98	14.4
36.8	0.00	0.00	1.48	1.22	2.97	1.76	0.00	0.00	0.00	4.26	2.86	14.6
52.0	0.00	0.00	0.00	0.00	2.86	0.00	0.00	0.00	0.00	5.74	3.42	12.0
73.5	0.00	0.00	0.00	0.00	2.49	0.00	1.83	0.00	0.00	7.11	13.2	24.7
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.46	0.00	8.46
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.22	3.33	2.53	2.52	8.47	3.62	2.36	.601	.897	28.6	42.7	100.

TABLE 35.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-11. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	7.30	0.00	0.00	0.00	.268	0.00	0.00	0.00	.149	0.00	2.30	10.0
4.60	9.18	0.00	.328	0.00	0.00	0.00	0.00	.328	0.00	0.00	4.35	14.2
6.50	11.2	0.00	.775	.984	0.00	0.00	0.00	0.00	0.00	0.00	8.41	21.4
9.19	8.20	1.65	0.00	0.00	0.00	1.67	0.00	2.09	0.00	0.00	14.1	27.9
13.0	11.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.31	0.00	5.81	20.4
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.08	0.00	6.08
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	47.2	1.65	1.10	.984	.268	1.67	0.00	2.42	3.46	6.08	35.0	100.

TABLE 36.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-11. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	41.0	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.5	110.
4.60	259.	56.0	19.0	28.9	0.00	14.0	15.6	0.00	20.0	31.6	.150E+04	.195E+04
6.50	.119E+04	260.	79.0	149.	229.	140.	42.0	114.	28.0	229.	.762E+04	.101E+05
9.19	.310E+04	.145E+04	297.	324.	152.	253.	0.00	350.	202.	443.	.137E+05	.202E+05
13.0	.369E+04	.178E+04	.195E+04	.110E+04	842.	515.	430.	402.	429.	.192E+04	.179E+05	.300E+05
18.4	.308E+04	.498E+04	.298E+04	.384E+04	.198E+04	.108E+04	870.	.153E+04	.168E+04	.348E+04	.267E+05	.519E+05
26.0	.134E+04	.692E+04	.607E+04	.295E+04	.335E+04	.142E+04	0.00	949.	.173E+04	.971E+04	.385E+05	.729E+05
36.8	.352E+04	.746E+04	.858E+04	.487E+04	.452E+04	.499E+04	.387E+04	.350E+04	.486E+04	.248E+05	.672E+05	.137E+06
52.0	0.00	0.00	.191E+04	.681E+04	.718E+04	.113E+05	.814E+04	.583E+04	.477E+04	.617E+05	.771E+05	.184E+06
73.5	0.00	0.00	.337E+04	.628E+04	0.00	.464E+04	.578E+04	0.00	.322E+05	.933E+05	.668E+05	.202E+06
104.	0.00	0.00	0.00	0.00	.842E+04	.145E+05	0.00	.223E+05	.368E+05	.118E+06	.635E+05	.198E+06
147.	0.00	0.00	0.00	0.00	0.00	0.00	.109E+05	0.00	0.00	.666E+05	.375E+05	.115E+06
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.625E+05	0.00	.625E+05
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.162E+05	.228E+05	.252E+05	.240E+05	.265E+05	.387E+05	.301E+05	.350E+05	.727E+05	.434E+06	.361E+06	.109E+07

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.378E-02	.184E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.612E-02	.101E-01
4.60	.230E-01	.516E-02	.175E-02	.266E-02	0.00	.129E-02	.145E-02	0.00	.184E-02	.291E-02	.138	.179
6.50	.109	.239E-01	.727E-02	.137E-01	.211E-01	.129E-01	.387E-02	.105E-01	.258E-02	.211E-01	.702	.928
9.19	.285	.133	.274E-01	.298E-01	.140E-01	.232E-01	0.00	.330E-01	.186E-01	.408E-01	1.26	1.86
13.0	.340	.164	.179	.101	.775E-01	.474E-01	.396E-01	.370E-01	.395E-01	.942E-01	1.64	2.76
18.4	.283	.451	.267	.354	.175	.925E-01	.819E-01	.141	.154	.313	2.46	4.77
26.0	.123	.637	.559	.272	.389	.131	0.00	.874E-01	.199	.894	3.54	6.71
36.8	.324	.687	.790	.375	.416	.459	.357	.322	.448	2.29	6.18	12.6
52.0	0.00	0.00	.176	.353	.655	1.04	.758	.537	.439	5.68	7.10	16.9
73.5	0.00	0.00	.310	.578	0.00	.427	.532	0.00	2.05	8.59	6.15	18.6
104.	0.00	0.00	0.00	0.00	.775	1.33	0.00	2.05	3.38	10.1	.584	18.2
147.	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	6.13	3.45	10.6
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.75	0.00	5.75
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	1.49	2.10	2.32	2.20	2.44	3.56	2.77	3.22	6.69	39.9	33.2	100.0

TABLE 37.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-12. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	139.	19.0	12.9	8.76	0.00	0.00	0.00	0.00	12.0	10.00	724.	926.
4.60	314.	46.0	67.4	18.0	0.00	45.0	0.00	12.0	31.0	92.0	.249E+04	.312E+04
6.50	816.	46.0	35.9	75.0	134.	38.0	77.0	0.00	22.0	149.	.391E+04	.527E+04
9.19	.150E+04	111.	118.	159.	116.	52.0	127.	0.00	0.00	169.	.642E+04	.870E+04
13.0	.229E+04	632.	474.	0.00	326.	0.00	121.	103.	353.	366.	.731E+04	.129E+05
18.4	924.	589.	795.	178.	.137E+04	0.00	212.	0.00	175.	636.	.858E+04	.134E+05
26.0	.138E+04	.183E+04	534.	965.	0.00	536.	.214E+04	.118E+04	.139E+04	.283E+04	.197E+05	.217E+05
36.8	0.00	930.	.164E+04	915.	.101E+04	.468E+04	.184E+04	.112E+04	.276E+04	.393E+04	.184E+05	.422E+05
52.0	0.00	0.00	0.00	.392E+04	0.00	.182E+04	0.00	.140E+04	.245E+04	.455E+04	.947E+04	.236E+05
73.5	0.00	0.00	0.00	0.00	0.00	.289E+04	0.00	0.00	0.00	.354E+04	0.00	.644E+04
104.	0.00	0.00	0.00	.615E+04	.564E+04	0.00	0.00	0.00	0.00	.591E+04	0.00	.177E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.737E+04	.338E+04	.363E+04	.124E+05	.859E+04	.103E+05	.372E+04	.381E+04	.741E+04	.270E+05	.676E+05	.155E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.896E-01	.182E-01	.638E-02	.564E-02	0.00	0.00	0.00	0.00	.773E-02	.644E-02	.467	.597
4.60	.282	.276E-01	.434E-01	.116E-01	0.00	.259E-01	0.00	.773E-02	.209E-01	.593E-01	1.61	2.01
6.50	.586	.256E-01	.231E-01	.483E-01	.861E-01	.245E-01	.496E-01	0.00	.142E-01	.963E-01	2.52	3.41
9.19	.966	.717E-01	.768E-01	.102	.709E-01	.335E-01	.818E-01	0.00	0.00	.109	4.13	5.64
13.0	1.48	.407	.305	0.00	.210	0.00	.779E-01	.664E-01	.227	.236	4.71	7.71
18.4	.595	.326	.512	.115	.888	0.00	.137	0.00	.113	.410	5.53	8.61
26.0	.898	.665	.344	.622	0.00	.245	1.38	.739	.898	1.31	6.88	14.1
36.8	0.00	.630	1.03	.589	.652	3.14	.672	.721	1.91	6.18	11.6	27.2
52.0	0.00	0.00	0.00	2.53	0.00	1.17	0.00	.903	1.58	2.93	6.19	15.2
73.5	0.00	0.00	0.00	0.00	0.00	1.86	0.00	0.00	0.00	2.28	0.00	4.15
104.	0.00	0.00	0.00	3.96	3.63	0.00	0.00	0.00	0.00	3.81	0.00	11.4
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	4.75	2.18	2.34	7.99	5.53	6.61	2.40	2.46	4.77	17.4	43.6	100.

TABLE 38.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-12. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	6.72	0.00	.644	0.00	.316	0.00	.483	0.00	.242	0.00	4.39	18.7
4.68	6.78	0.00	0.00	0.00	0.00	.483	0.00	0.00	0.00	0.00	6.00	13.3
6.50	3.53	0.00	1.29	0.00	0.00	.926	0.00	0.00	0.00	0.00	5.75	11.5
9.13	6.74	3.18	2.90	0.00	3.99	0.00	0.00	3.18	0.00	0.00	26.6	48.7
13.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.4	0.00	7.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.01
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	23.0	10.2	4.07	0.00	4.31	1.41	.483	3.18	.242	0.00	51.6	100.

TABLE 39.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-12. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	27.2	9.64	9.64	0.00	2.63	0.00	0.00	0.00	0.00	0.00	133.	182.
4.60	497.	52.6	32.4	21.0	32.4	18.4	0.00	0.00	29.0	126.	.413E+04	.494E+04
6.50	.144E+04	604.	442.	356.	121.	194.	159.	152.	0.00	492.	.154E+05	.193E+05
9.19	.170E+04	.154E+04	498.	794.	395.	652.	598.	460.	384.	972.	.268E+05	.339E+05
13.0	.190E+04	.275E+04	.174E+04	.130E+04	693.	.142E+04	901.	575.	522.	.197E+04	.384E+05	.522E+05
18.4	682.	.366E+04	.378E+04	.218E+04	.187E+04	.110E+04	.217E+04	.396E+04	.228E+04	.474E+04	.548E+05	.813E+05
26.0	475.	.348E+04	.178E+04	.454E+04	.528E+04	.428E+04	.515E+04	.387E+04	.201E+04	.103E+05	.713E+05	.112E+06
36.8	0.00	.189E+04	.534E+04	.477E+04	.670E+04	.877E+04	.414E+04	.250E+04	.665E+04	.268E+05	.119E+06	.186E+06
52.0	0.00	0.00	.283E+04	.780E+04	.171E+04	.422E+04	.961E+04	.623E+04	.162E+05	.464E+05	.102E+06	.196E+06
73.5	0.00	0.00	0.00	.292E+04	0.00	.280E+04	.585E+04	.125E+05	0.00	.757E+05	.868E+05	.187E+06
104.	0.00	0.00	0.00	0.00	0.00	.654E+04	0.00	0.00	.662E+04	.325E+05	.158E+05	.615E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.129E+05	0.00	.129E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.672E+04	.132E+05	.156E+05	.247E+05	.160E+05	.300E+05	.286E+05	.302E+05	.346E+05	.213E+06	.534E+06	.947E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.207E-02	.102E-02	.102E-02	0.00	.277E-03	0.00	0.00	0.00	0.00	0.00	.141E-01	.192E-01
4.60	.524E-01	.555E-02	.342E-02	.222E-02	.342E-02	.194E-02	0.00	0.00	.314E-02	.135E-01	.436	.521
6.50	.152	.637E-01	.467E-01	.376E-01	.128E-01	.204E-01	.167E-01	.160E-01	0.00	.520E-01	1.62	2.04
9.19	.179	.163	.526E-01	.838E-01	.417E-01	.688E-01	.623E-01	.486E-01	.321E-01	.103	2.75	3.58
13.0	.201	.290	.183	.138	.732E-01	.150	.951E-01	.607E-01	.551E-01	.200	4.06	5.51
18.4	.721E-01	.386	.399	.230	.198	.117	.229	.418	.241	.501	5.79	8.58
26.0	.501E-01	.367	.188	.488	.558	.452	.544	.409	.212	1.09	7.53	11.9
36.8	0.00	.115	.564	.504	.708	.926	.437	.264	.702	2.83	12.6	19.6
52.0	0.00	0.00	.214	.824	.181	.446	1.01	.658	1.71	4.98	18.7	28.7
73.5	0.00	0.00	0.00	.388	0.00	.295	.617	1.32	0.00	7.99	9.16	19.7
104.	0.00	0.00	0.00	0.00	0.00	.691	0.00	0.00	.698	3.43	1.67	6.49
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.36	0.00	1.36
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.710	1.39	1.64	2.61	1.76	3.17	3.02	3.19	3.65	22.5	56.4	100.

TABLE 40.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-14. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	9.64	10.5	0.00	8.76	0.00	0.00	0.00	0.00	0.00	0.00	91.1	129.
4.60	201.	12.3	43.8	51.7	39.4	19.3	0.00	0.00	0.00	96.4	.203E+04	.256E+04
6.50	562.	235.	131.	39.4	94.6	64.8	62.2	28.9	0.00	264.	.554E+04	.702E+04
9.19	513.	338.	469.	103.	224.	256.	273.	323.	176.	662.	.984E+04	.132E+05
13.0	.112E+04	418.	484.	695.	360.	209.	147.	92.9	441.	455.	.121E+05	.165E+05
18.4	584.	.154E+04	.138E+04	171.	476.	462.	0.00	0.00	324.	.235E+04	.145E+05	.218E+05
26.0	378.	725.	0.00	.152E+04	745.	411.	0.00	.136E+04	524.	.195E+04	.147E+05	.223E+05
36.8	0.00	0.00	0.00	0.00	.169E+04	0.00	.302E+04	867.	.398E+04	.471E+04	.148E+05	.269E+05
52.0	0.00	0.00	0.00	.171E+04	.518E+04	0.00	.431E+04	0.00	0.00	.502E+04	.595E+04	.221E+05
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.572E+04	.572E+04
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.337E+04	.327E+04	.251E+04	.438E+04	.873E+04	.142E+04	.868E+04	.268E+04	.536E+04	.155E+05	.844E+05	.148E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.688E-02	.758E-02	0.00	.625E-02	0.00	0.00	0.00	0.00	0.00	0.00	.650E-01	.956E-01
4.60	.143	.875E-02	.313E-01	.369E-01	.201E-01	.138E-01	0.00	0.00	0.00	.688E-01	1.45	1.78
6.50	.401	.168	.931E-01	.281E-01	.675E-01	.456E-01	.444E-01	.206E-01	0.00	.188	3.95	5.81
9.19	.366	.241	.334	.731E-01	.168	.183	.195	.231	.126	.473	7.02	9.49
13.0	.798	.293	.345	.496	.257	.149	.105	.663E-01	.314	.324	8.63	11.8
18.4	.417	1.10	.988	.122	.339	.329	0.00	0.00	.231	1.67	10.3	15.5
26.0	.269	.517	0.00	1.88	.531	.293	0.00	.974	.374	1.39	10.5	15.9
36.8	0.00	0.00	0.00	0.00	1.21	0.00	2.73	.619	2.78	3.36	9.96	20.7
52.0	0.00	0.00	0.00	1.22	3.64	0.00	3.08	0.00	0.00	3.58	4.25	15.8
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.00	4.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.40	2.34	1.79	3.07	6.23	1.01	6.15	1.91	3.63	11.1	60.2	100.0

TABLE 41.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-14. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	0.53	1.15	0.00	0.00	0.00	0.00	0.00	0.00	.223	.335	4.04	15.1
4.60	3.39	0.00	.670	1.38	0.00	0.00	0.00	0.00	0.00	.633	2.94	9.01
6.50	4.06	2.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.27	7.49	15.7
9.19	12.5	0.00	2.50	0.00	0.00	2.27	0.00	0.00	0.00	0.00	10.7	28.0
13.0	3.87	0.00	4.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.49	16.5
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.7	15.7
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	32.4	4.02	7.34	1.38	0.00	2.27	0.00	0.00	.223	2.23	50.2	100.0

TABLE 42.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-14. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	8.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.88	8.76	25.4
4.60	288.	0.00	0.00	20.2	0.00	0.00	0.00	0.00	0.00	0.00	26.3	335.
6.50	538.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.0	616.
9.19	444.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	223.	668.
13.0	635.	122.	138.	0.00	0.00	103.	0.00	0.00	0.00	0.00	0.00	998.
18.4	.126E+04	294.	189.	0.00	0.00	0.00	192.	0.00	0.00	0.00	0.00	.194E+04
26.0	0.00	0.00	474.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	474.
36.8	720.	909.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.163E+04
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.309E+04	.133E+04	802.	20.2	0.00	103.	192.	0.00	0.00	7.88	336.	.668E+04

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.131	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.118	.131	.380
4.60	4.31	0.00	0.00	.302	0.00	0.00	0.00	0.00	0.00	0.00	.393	5.01
6.50	8.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.17	9.22
9.19	6.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.34	9.99
13.0	9.51	1.62	2.07	0.00	0.00	1.53	0.00	0.00	0.00	0.00	0.00	14.9
18.4	16.9	4.41	2.63	0.00	0.00	0.00	2.87	0.00	0.00	0.00	0.00	29.0
26.0	0.00	0.00	7.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.10
36.8	10.8	13.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.4
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	56.3	19.6	12.0	.302	0.00	1.53	2.87	0.00	0.00	.118	5.04	100.0

TABLE 43.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-15. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	10.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.0	45.6
4.60	49.1	0.00	0.00	0.00	17.5	0.00	0.00	0.00	0.00	18.4	265.	350.
6.50	251.	33.3	0.00	0.00	0.00	0.00	30.7	0.00	0.00	88.5	592.	996.
9.19	317.	316.	62.2	53.4	0.00	78.8	52.6	82.4	0.00	73.6	.139E+04	.243E+04
13.0	738.	355.	127.	0.00	128.	93.7	0.00	0.00	157.	85.0	.161E+04	.329E+04
18.4	563.	638.	269.	0.00	253.	246.	179.	289.	212.	383.	.164E+04	.453E+04
26.0	.155E+04	481.	448.	.114E+04	0.00	365.	.105E+04	431.	0.00	854.	.249E+04	.881E+04
36.8	0.00	.202E+04	0.00	0.00	0.00	0.00	0.00	688.	.121E+04	0.00	0.00	.392E+04
52.0	0.00	.170E+04	0.00	0.00	0.00	0.00	.138E+04	0.00	0.00	.382E+04	.195E+04	.885E+04
73.5	0.00	0.00	0.00	0.00	.317E+04	0.00	0.00	0.00	0.00	.493E+04	0.00	.818E+04
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.815E+04	0.00	.815E+04
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.348E+04	.557E+04	986.	.114E+04	.357E+04	784.	.263E+04	.141E+04	.158E+04	.103E+05	.398E+04	.495E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	0.01	.290	0.00	0.00	0.00	0.00	0.00	0.00	1.26	0.00	1.55	11.9
4.60	6.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10	9.68
6.50	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.61
9.19	15.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.2
13.0	17.8	0.00	0.00	0.00	0.00	0.00	15.8	0.00	0.00	0.00	27.0	60.6
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	31.0	.290	0.00	0.00	0.00	0.00	15.8	0.00	1.26	0.00	31.7	100.0

TABLE 44.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-15. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
0.81	.290	0.00	0.00	0.00	0.00	0.00	0.00	1.26	0.00	1.55	11.9
3.25												
6.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.10	9.68
4.60												
2.61	0.00	0.00	0.00	00	0.00	0.00	0.00	0.00	0.00	0.00	2.61
6.58												
15.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.2
9.19												
17.6	0.00	0.00	0.00	0.00	0.00	15.8	0.00	0.00	0.00	27.0	60.6
13.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.4												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.8												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	51.0	.290	0.00	0.00	0.00	0.00	15.8	0.00	1.26	0.00	31.7	100.0

TABLE 45.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-15. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	30.6	16.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.5	78.0
4.60	.106E+04	48.9	56.9	53.4	32.4	0.00	0.00	0.00	0.00	0.00	283.	.153E+04
6.50	.277E+04	462.	119.	143.	75.3	56.1	0.00	0.00	0.00	29.8	638.	.438E+04
9.19	.358E+04	825.	357.	191.	169.	106.	132.	84.1	0.00	106.	319.	.587E+04
13.0	.355E+04	925.	615.	139.	0.00	151.	118.	218.	210.	0.00	477.	.640E+04
18.4	.298E+04	.167E+04	815.	356.	530.	534.	289.	0.00	0.00	0.00	814.	.783E+04
26.0	.149E+04	.459E+04	639.	0.00	0.00	449.	907.	0.00	375.	669.	.152E+04	.106E+05
36.8	.282E+04	.501E+04	.349E+04	.419E+04	.282E+04	0.00	739.	0.00	0.00	.112E+04	.345E+04	.240E+05
52.0	0.00	0.00	0.00	.378E+04	0.00	0.00	.188E+04	.202E+04	0.00	0.00	.235E+04	.995E+04
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.338E+04	0.00	.338E+04
104.	0.00	0.00	0.00	0.00	0.00	.716E+04	0.00	0.00	0.00	0.00	0.00	.716E+04
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.174E+05	.135E+05	.889E+04	.876E+04	.628E+04	.846E+04	.399E+04	.233E+04	585.	.531E+04	.985E+04	.812E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.628E-01	.205E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.130E-01	.961E-01
4.60	1.31	.529E-01	.782E-01	.658E-01	.399E-01	0.00	0.00	0.00	0.00	0.00	.349	1.89
6.50	3.42	.569	.147	.176	.926E-01	.691E-01	0.00	0.00	0.00	.367E-01	.786	5.29
9.19	4.42	1.02	.439	.235	.208	.131	.163	.104	0.00	.131	.393	7.24
13.0	4.37	1.14	.758	.172	0.00	.186	.146	.269	.259	0.00	.587	7.89
18.4	3.58	2.06	1.00	.438	.653	.658	.258	0.00	0.00	0.00	1.00	9.65
26.0	1.84	5.66	.787	0.00	0.00	.553	1.12	0.00	.462	.825	1.07	13.1
36.8	2.49	6.17	6.76	5.16	2.48	0.00	.910	0.00	0.00	1.39	4.25	29.6
52.0	0.00	0.00	0.00	4.55	0.00	0.00	2.32	2.49	0.00	0.00	2.89	12.3
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.16	0.00	4.16
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	21.5	16.7	9.97	10.8	3.48	10.4	4.91	2.87	.721	6.34	12.1	100.0

TABLE 46.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-16. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	10.4	0.00	0.00	10.5	0.76	0.00	0.00	0.00	7.01	27.2	526.	597.
4.60	690.	166.	99.9	39.4	69.2	0.00	10.4	0.00	33.3	214.	.692E+04	.825E+04
6.50	972.	457.	371.	448.	252.	211.	289.	0.00	116.	918.	.197E+05	.236E+05
9.19	.219E+04	.142E+04	.100E+04	735.	520.	577.	766.	755.	520.	.166E+04	.287E+05	.389E+05
13.0	.294E+04	.306E+04	.156E+04	.222E+04	.138E+04	.175E+04	582.	388.	.194E+04	.196E+04	.410E+05	.588E+05
18.4	.261E+04	.381E+04	.464E+04	.319E+04	.277E+04	.171E+04	.221E+04	.281E+04	.323E+04	.884E+04	.500E+05	.858E+05
26.0	408.	.227E+04	.614E+04	.570E+04	.575E+04	.273E+04	.555E+04	.355E+04	.822E+04	.238E+05	.786E+05	.142E+06
36.8	0.00	.146E+04	.645E+04	.679E+04	.413E+04	.828E+04	.406E+04	.963E+04	.122E+05	.564E+05	.936E+05	.203E+06
52.0	0.00	0.00	.143E+04	.121E+05	.969E+04	.899E+04	.483E+04	.124E+05	.646E+04	.114E+06	.956E+05	.264E+06
73.5	0.00	0.00	0.00	.414E+04	0.00	.304E+04	.772E+04	.183E+05	.183E+05	.146E+06	.173E+05	.215E+06
104.	0.00	0.00	0.00	0.00	0.00	0.00	.541E+04	0.00	.252E+05	.708E+05	0.00	.101E+06
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.130E+05	.716E+05	0.00	.846E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.983E+04	.127E+05	.217E+05	.354E+05	.246E+05	.273E+05	.306E+05	.470E+05	.892E+05	.496E+06	.432E+06	.123E+07

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.150E-02	0.00	0.00	.858E-03	.715E-03	0.00	0.00	0.00	.572E-03	.222E-02	.429E-01	.407E-01
4.60	.563E-01	.135E-01	.815E-02	.322E-02	.565E-02	0.00	.150E-02	0.00	.272E-02	.174E-01	.565	.673
6.50	.793E-01	.373E-01	.303E-01	.365E-01	.206E-01	.172E-01	.170E-01	0.00	.943E-02	.749E-01	1.60	1.93
9.19	.179	.116	.818E-01	.600E-01	.425E-01	.471E-01	.625E-01	.616E-01	.424E-01	.136	2.34	3.17
13.0	.240	.258	.128	.181	.113	.143	.475E-01	.317E-01	.158	.160	3.35	4.80
18.4	.213	.311	.379	.260	.226	.140	.180	.164	.263	.721	4.88	6.94
26.0	.333E-01	.185	.501	.465	.469	.223	.453	.289	.671	1.86	6.41	11.6
36.8	0.00	.119	.526	.554	.337	.676	.332	.785	.992	4.68	7.63	16.6
52.0	0.00	0.00	.117	.987	.791	.733	.328	1.01	.527	9.27	7.88	21.6
73.5	0.00	0.00	0.00	.338	0.00	.248	.638	1.49	1.49	12.8	1.41	17.6
104.	0.00	0.00	0.00	0.00	0.00	0.00	.442	0.00	2.06	5.78	0.00	8.28
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.06	5.84	0.00	6.90
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.002	1.03	1.77	2.09	2.00	2.23	2.49	3.04	7.27	40.4	35.2	100.

TABLE 47.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-16. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	5.97	.636	0.00	0.00	0.00	0.00	.424E-01	0.00	.989E-01	0.00	3.50	10.3
4.60	5.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.311	2.78	8.47
6.50	7.23	1.61	0.00	.395	1.20	0.00	0.00	0.00	0.00	0.00	4.73	15.2
9.19	6.00	.876	1.00	.918	0.00	.692	0.00	0.00	0.00	0.00	2.26	11.8
13.0	7.84	3.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.73	15.3
18.4	2.62	0.00	3.66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.34	13.6
26.0	0.00	0.00	0.00	5.76	0.00	0.00	0.00	0.00	7.32	0.00	0.00	13.1
36.8	12.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.1
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	47.4	6.85	4.66	7.08	1.20	.692	.424E-01	0.00	7.42	.311	24.4	100.

TABLE 48.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-16. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
17.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	17.5
3.25												
147.	0.00	28.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.4	223.	
4.60												
629.	110.	0.00	29.8	0.00	0.00	0.00	0.00	0.00	23.7	34.2	826.	
6.50												
989.	142.	121.	0.00	132.	0.00	0.00	0.00	0.00	0.00	131.	.144E+04	
9.19												
.102E+04	263.	0.00	0.00	116.	0.00	0.00	0.00	0.00	93.7	85.9	.158E+04	
13.0												
.148E+04	482.	187.	627.	0.00	0.00	0.00	0.00	0.00	0.00	436.	.322E+04	
18.4												
.120E+04	393.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.159E+04	
26.0												
.320E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.320E+04	
36.8												
.159E+04	.170E+04	.182E+04	.260E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.771E+04	
52.0												
0.00	.271E+04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.271E+04	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
.102E+05	.579E+04	.215E+04	.326E+04	248.	0.00	0.00	0.00	0.00	117.	740.	.225E+05	

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
.778E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.778E-01	
3.25												
.654	0.00	.125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.237	1.02	
4.60												
2.79	.487	0.00	.132	0.00	0.00	0.00	0.00	0.00	.105	.152	3.67	
6.50												
4.04	.631	.537	0.00	.500	0.00	0.00	0.00	0.00	0.00	.500	6.38	
9.19												
4.55	1.17	0.00	0.00	.514	0.00	0.00	0.00	0.00	.416	.381	7.03	
13.0												
6.59	2.14	.829	2.79	0.00	0.00	0.00	0.00	0.00	0.00	1.94	14.3	
18.4												
5.34	1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.08	
26.0												
14.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.2	
36.8												
7.08	7.54	8.07	11.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.2	
52.0												
0.00	12.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.0	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
45.3	25.7	9.56	14.5	1.10	0.00	0.00	0.00	0.00	.522	3.29	100.	

TABLE 49.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-17. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	17.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.6	34.2
4.60	152.	11.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	84.1	248.
6.50	253.	110.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	265.	627.
9.19	673.	104.	227.	66.6	0.00	0.00	0.00	0.00	0.00	0.00	230.	.130E+04
13.0	798.	379.	0.00	0.00	0.00	0.00	0.00	160.	0.00	0.00	327.	.166E+04
18.4	696.	899.	0.00	623.	0.00	273.	0.00	456.	0.00	0.00	0.00	.295E+04
26.0	.167E+04	.165E+04	930.	795.	0.00	588.	0.00	0.00	0.00	513.	445.	.659E+04
36.8	800.	.118E+04	0.00	.122E+04	0.00	0.00	0.00	0.00	0.00	.108E+04	0.00	.428E+04
52.0	0.00	0.00	0.00	0.00	0.00	0.00	.221E+04	0.00	.146E+04	0.00	0.00	.367E+04
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.292E+04	0.00	0.00	0.00	.292E+04
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.506E+04	.426E+04	.116E+04	.270E+04	0.00	861.	.221E+04	.354E+04	.146E+04	.160E+04	.137E+04	.242E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.724E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.687E-01	.141
4.60	.630	.470E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.347	1.02
6.50	1.05	.452	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09	2.59
9.19	2.78	.431	.937	.275	0.00	0.00	0.00	0.00	0.00	0.00	.948	5.37
13.0	3.30	1.57	0.00	0.00	0.00	0.00	0.00	.662	0.00	0.00	1.35	6.87
18.4	2.87	3.71	0.00	2.57	0.00	1.13	0.00	1.89	0.00	0.00	0.00	12.2
26.0	6.90	6.82	3.84	3.28	0.00	2.43	0.00	0.00	0.00	2.12	1.84	27.2
36.8	3.30	4.55	0.00	5.03	0.00	0.00	0.00	0.00	0.00	4.48	0.00	17.4
52.0	0.00	0.00	0.00	0.00	0.00	0.00	9.13	0.00	6.04	0.00	0.00	15.2
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.1	0.00	0.00	0.00	12.1
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	20.9	17.6	4.78	11.2	0.00	3.56	9.13	14.6	6.04	6.59	5.54	100.

TABLE 50.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-17. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
2.55		.191	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.255	2.99
3.25 3.81		.303	0.00	0.00	.303	0.00	0.00	0.00	0.00	.239	.223	4.87
4.60 4.27		.732	.748	.732	.669	.541	0.00	0.00	0.00	0.00	1.18	8.87
6.50 22.3		.955	3.57	2.32	1.02	1.13	2.01	1.32	3.82	2.10	15.0	55.6
9.19 2.45		3.52	0.00	0.00	0.00	0.00	0.00	1.56	1.75	0.00	5.38	14.7
13.0 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.4 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0 13.0		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.0
36.8 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104. 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0 00
147. 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208. 0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
48.4		5.70	4.32	3.06	1.99	1.67	2.01	2.88	5.57	2.34	22.1	100.0

TABLE 51.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-17. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	137.	10.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.8	191.
6.50	.118E+04	49.1	56.4	93.7	35.0	0.00	0.00	0.00	0.00	34.2	387.	.173E+04
9.19	.310E+04	319.	99.9	179.	26.3	61.2	0.00	0.00	0.00	0.00	648.	.443E+04
13.0	.354E+04	883.	216.	134.	0.00	60.5	70.1	864.	0.00	0.00	930.	.618E+04
18.4	.369E+04	.162E+04	591.	240.	151.	0.00	0.00	0.00	0.00	0.00	.131E+04	.760E+04
26.0	.499E+04	.126E+04	.137E+04	231.	691.	868.	0.00	0.00	0.00	0.00	383.	.911E+04
36.8	.177E+04	.342E+04	.295E+04	653.	572.	0.00	0.00	0.00	0.00	0.00	0.00	.937E+04
52.0	0.00	.589E+04	.546E+04	.117E+04	.124E+04	0.00	0.00	0.00	0.00	0.00	0.00	.138E+05
73.5	0.00	.164E+04	.151E+04	.782E+04	0.00	0.00	.163E+04	0.00	.286E+04	0.00	.496E+04	.197E+05
104.	0.00	0.00	0.00	.419E+04	.385E+04	.420E+04	.343E+04	0.00	0.00	.769E+04	0.00	.234E+05
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.184E+05	.151E+05	.123E+05	.147E+05	.657E+04	.459E+04	.519E+04	864.	.286E+04	.773E+04	.849E+04	.954E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.143	.118E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.459E-01	.200
6.50	1.17	.515E-01	.101	.393E-01	.368E-01	0.00	0.00	0.00	0.00	.358E-01	.322	1.82
9.19	3.25	.334	.185	.187	.276E-01	.643E-01	0.00	0.00	0.00	0.00	.672	4.64
13.0	3.71	.926	.226	.141	0.00	.634E-01	.735E-01	.277	0.00	0.00	.976	6.33
18.4	3.87	1.79	.620	.252	.158	0.00	0.00	0.00	0.00	0.00	1.37	7.97
26.0	5.24	1.32	1.43	.243	.725	.281	0.00	0.00	0.00	0.00	.318	9.56
36.8	1.86	3.59	3.18	.684	.600	0.00	0.00	0.00	0.00	0.00	0.00	9.83
52.0	0.00	6.18	5.73	1.23	1.30	0.00	0.00	0.00	0.00	0.00	0.00	14.4
73.5	0.00	1.72	1.58	0.00	0.00	0.00	1.77	0.00	2.15	0.00	5.09	20.6
104.	0.00	0.00	0.00	4.40	4.04	4.40	3.60	0.00	0.00	8.07	0.00	24.5
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19.2	15.8	12.9	15.4	6.89	4.81	5.44	.277	2.15	8.18	8.91	100.0

TABLE 52.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-18. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	9.64	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.13	9.64	572.	597.
4.60	484.	860.	211.	33.3	36.0	19.3	0.00	0.00	95.5	175.	.832E+04	.964E+04
6.50	.138E+04	955.	162.	411.	279.	431.	291.	75.3	21.9	648.	.234E+05	.277E+05
9.19	.142E+04	.811E+04	.183E+04	816.	860.	673.	646.	799.	342.	.135E+04	.380E+05	.483E+05
13.0	.182E+04	.394E+04	.309E+04	.144E+04	.167E+04	.836E+04	.149E+04	.186E+04	.196E+04	.227E+04	.554E+05	.773E+05
18.4	.242E+04	.557E+04	.383E+04	.433E+04	.373E+04	.304E+04	.196E+04	.436E+04	.527E+04	.106E+05	.744E+05	.119E+06
26.0	.121E+04	.719E+04	.116E+05	.667E+04	.665E+04	.789E+04	.637E+04	.748E+04	.654E+04	.248E+05	.110E+06	.196E+06
36.8	0.00	.453E+04	.115E+05	.778E+04	.112E+05	.118E+05	.132E+05	.875E+04	.164E+05	.694E+05	.145E+06	.299E+06
52.0	0.00	.397E+04	.586E+04	.116E+05	.107E+05	.192E+05	.592E+04	.139E+05	.259E+05	.116E+06	.168E+06	.384E+06
73.5	0.00	0.00	0.00	.312E+04	0.00	.273E+04	.378E+05	.259E+05	.389E+05	.211E+06	.157E+06	.468E+06
104.	0.00	0.00	0.00	0.00	0.00	.745E+04	0.00	.146E+05	.448E+05	.144E+06	0.00	.211E+06
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.163E+05	0.00	.163E+05
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.873E+04	.281E+05	.369E+05	.361E+05	.351E+05	.557E+05	.669E+05	.777E+05	.132E+06	.599E+06	.708E+06	.186E+07

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.519E-03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.330E-03	.519E-03	.308E-01	.322E-01
4.60	.261E-01	.148E-01	.114E-01	.179E-02	.196E-02	.104E-02	0.00	0.00	.514E-02	.944E-02	.448	.519
6.50	.746E-01	.299E-01	.873E-02	.221E-01	.151E-01	.232E-01	.157E-01	.406E-02	.118E-02	.349E-01	1.26	1.49
9.19	.763E-01	.114	.664E-01	.439E-01	.468E-01	.362E-01	.348E-01	.430E-01	.184E-01	.727E-01	2.05	2.60
13.0	.983E-01	.212	.167	.774E-01	.981E-01	.127	.885E-01	.100E+00	.106	.122	2.98	4.17
18.4	.131	.280	.174	.233	.291	.164	.106	.235	.284	.573	4.01	6.41
26.0	.649E-01	.287	.629	.359	.358	.425	.343	.403	.352	1.34	5.92	10.6
36.8	0.00	.244	.621	.415	.601	.638	.711	.471	.883	3.74	7.79	16.1
52.0	0.00	.214	.316	.626	.579	1.03	.319	.749	1.48	6.36	9.08	20.7
73.5	0.00	0.00	0.00	.169	0.00	.147	2.00	1.39	1.66	11.4	8.45	25.2
104.	0.00	0.00	0.00	0.00	0.00	.401	0.00	.787	2.42	7.75	0.00	11.4
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.878	0.00	.878
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.471	1.52	1.99	1.98	1.89	3.00	3.60	4.19	7.13	32.3	42.8	100.

TABLE 53.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-18. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.66	.111	0.00	.421E-01	0.00	.474E-01	0.00	0.00	.579E-01	.632E-01	1.48	5.45
3.25												
2.54	0.00	.685E-01	.121	0.00	0.00	0.00	0.00	0.00	0.00	1.31	4.04
4.60												
4.02	.242	.364	.169	.295	.179	0.00	0.00	0.00	0.00	3.07	8.24
6.50												
6.84	1.49	0.00	.327	.917	0.00	.400	0.00	0.00	0.00	1.31	11.3
9.19												
3.85	.869	0.00	1.01	0.00	0.00	0.00	0.00	.748	0.00	4.18	10.7
13.0												
2.74	1.53	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	4.41	9.76
18.4												
3.57	10.4	0.00	0.00	0.00	2.52	0.00	2.28	0.00	0.00	0.00	18.7
26.0												
0.00	0.00	4.57	4.16	7.97	0.00	0.00	0.00	0.00	0.00	0.00	16.7
36.8												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.1	0.00	15.1
52.0												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	27.2	14.6	5.00	6.90	9.09	2.74	.400	2.28	.806	15.2	15.7	100.0

TABLE 54.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-18. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	77.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.2	111.
4.68	713.	56.1	74.5	14.9	0.00	0.00	0.00	0.00	0.00	20.2	311.	.119E+04
6.58	.168E+04	383.	147.	85.0	41.2	0.00	32.4	0.00	0.00	92.9	417.	.288E+04
9.19	.288E+04	.111E+04	342.	0.00	0.00	64.0	46.4	117.	0.00	123.	460.	.427E+04
13.0	.197E+04	.118E+04	399.	88.5	217.	96.4	96.4	0.00	0.00	153.	.103E+04	.522E+04
18.4	.383E+04	.252E+04	753.	633.	0.00	0.00	644.	0.00	438.	267.	0.00	.909E+04
26.0	813.	.394E+04	0.00	0.00	0.00	0.00	640.	0.00	433.	931.	854.	.761E+04
36.8	.153E+04	.297E+04	756.	.201E+04	0.00	0.00	850.	.196E+04	896.	0.00	0.00	.110E+05
52.0	0.00	.147E+04	0.00	0.00	0.00	0.00	0.00	0.00	.145E+04	.138E+04	0.00	.421E+04
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.126E+05	.135E+05	.247E+04	.203E+04	258.	160.	.232E+04	.206E+04	.322E+04	.297E+04	.311E+04	.456E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.169	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.750E-01	.244
4.68	1.56	.123	.163	.327E-01	0.00	0.00	0.00	0.00	0.00	.442E-01	.682	2.61
6.58	3.68	.665	.323	.186	.903E-01	0.00	.711E-01	0.00	0.00	.284	.915	6.13
9.19	4.48	2.44	.750	0.00	0.00	.140	.102	.258	0.00	.269	1.01	9.36
13.0	4.32	2.58	.875	.194	.477	.211	.211	0.00	0.00	.336	2.25	11.5
18.4	8.41	5.54	1.65	1.39	0.00	0.00	1.41	0.00	.961	.586	0.00	19.9
26.0	1.78	6.63	0.00	0.00	0.00	0.00	1.40	0.00	.950	2.04	1.87	16.7
36.8	3.36	6.52	1.66	4.41	0.00	0.00	1.88	4.38	1.97	0.00	0.00	24.1
52.0	0.00	3.22	0.00	0.00	0.00	0.00	0.00	0.00	3.19	3.04	0.00	9.45
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	27.7	29.7	5.42	6.21	.567	.352	5.06	4.56	7.07	6.52	6.82	100.

TABLE 55.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-19. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	45.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.5	0.00	144.	200.
4.60	586.	209.	132.	109.	58.8	0.00	0.00	0.00	88.0	388.	.294E+04	.436E+04
6.50	.177E+04	975.	496.	420.	308.	132.	215.	36.0	63.1	862.	.629E+04	.116E+05
9.19	.233E+04	.268E+04	.156E+04	982.	928.	734.	644.	489.	152.	988.	.739E+04	.186E+05
13.0	.240E+04	.191E+04	.286E+04	.160E+04	.167E+04	850.	898.	.114E+04	683.	.125E+04	.737E+04	.227E+05
18.4	.257E+04	.298E+04	.363E+04	.317E+04	.307E+04	.282E+04	.156E+04	.115E+04	.198E+04	835.	.611E+04	.309E+05
26.0	.127E+04	.392E+04	.717E+04	.335E+04	.312E+04	.700E+04	.388E+04	.246E+04	.137E+04	.142E+04	.985E+04	.446E+05
36.8	0.00	0.00	.317E+04	.114E+05	.426E+04	.638E+04	.116E+04	.138E+04	.533E+04	.562E+04	.384E+04	.417E+05
52.0	0.00	0.00	.154E+04	.263E+04	0.00	.212E+04	0.00	.379E+04	.176E+04	.436E+04	.500E+04	.212E+05
73.5	0.00	0.00	0.00	0.00	0.00	.385E+04	0.00	0.00	0.00	0.00	0.00	.385E+04
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.110E+05	.125E+05	.286E+05	.234E+05	.134E+05	.231E+05	.836E+04	.103E+05	.113E+05	.156E+05	.493E+05	.199E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.229E-01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.526E-02	0.00	.722E-01	.100
4.60	.294	.105	.664E-01	.548E-01	.855E-01	0.00	0.00	0.00	.141E-01	.154	1.48	2.19
6.50	.889	.430	.249	.211	.154	.664E-01	.108	.185E-01	.317E-01	.433	3.16	5.81
9.19	1.17	1.38	.782	.453	.466	.369	.323	.896	.766E-01	.492	3.71	9.36
13.0	1.21	.961	1.44	.806	.848	.431	.451	.575	.343	.638	3.78	11.4
18.4	1.29	1.46	1.83	1.59	1.54	1.81	.784	.579	.955	.419	4.87	15.5
26.0	.637	1.97	3.68	1.68	1.57	3.52	1.95	1.24	.687	.712	4.55	32.1
36.8	0.00	0.00	1.59	5.73	2.14	3.21	.362	.653	2.69	2.82	1.52	20.9
52.0	0.00	0.00	.774	1.32	0.00	1.87	0.00	1.90	.685	2.19	2.01	10.6
73.5	0.00	0.00	0.00	0.00	0.00	1.93	0.00	0.00	0.00	0.00	0.00	1.93
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	5.31	6.29	10.3	11.8	6.73	11.6	4.88	5.17	5.69	7.05	24.8	100.

TABLE 56.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-19. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size discributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	9.17	.449	.473	0.00	0.00	0.00	0.00	.150	.772	0.00	5.68	16.7
4.60	3.54	.449	.324	0.00	0.00	0.00	0.00	0.00	.399	.374	9.05	14.1
6.50	1.02	0.00	1.74	0.00	0.00	0.00	0.00	0.00	0.00	.822	5.53	9.12
9.19	3.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.40	4.61
13.0	8.22	0.00	0.00	0.00	0.00	0.00	0.00	2.67	3.81	0.00	2.49	17.2
18.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.00	6.20	13.0
26.0	0.00	14.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.9	25.2
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	25.2	15.3	2.54	0.00	0.00	0.00	0.00	2.82	4.98	0.00	41.2	100.

TABLE 57.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-19. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	24.5	.876	0.00	0.00	7.01	0.00	0.00	0.00	0.00	0.00	0.00	32.4
4.60	506.	16.6	0.00	28.9	18.4	0.00	0.00	0.00	0.00	17.5	49.9	638.
6.58	.190E+04	129.	83.2	49.1	56.1	26.3	0.00	0.00	0.00	0.00	521.	.277E+04
9.19	.204E+04	531.	53.4	94.6	0.00	0.00	51.7	0.00	0.00	59.6	470.	.338E+04
13.0	.206E+04	763.	718.	158.	375.	157.	0.00	0.00	124.	0.00	339.	.548E+04
18.4	.204E+04	.171E+04	511.	0.00	513.	300.	286.	0.00	762.	0.00	849.	.777E+04
26.0	.267E+04	.264E+04	.264E+04	885.	511.	904.	623.	639.	0.00	.161E+04	0.00	.131E+05
36.8	0.00	0.00	.206E+04	.156E+04	.226E+04	691.	0.00	885.	887.	799.	.179E+04	.108E+05
52.0	0.00	0.00	.136E+04	0.00	0.00	0.00	.212E+04	0.00	0.00	0.00	.150E+04	.518E+04
73.5	0.00	0.00	0.00	.416E+04	0.00	.448E+04	0.00	0.00	0.00	0.00	0.00	.864E+04
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.918E+04	.918E+04
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.128E+05	.573E+04	.762E+04	.694E+04	.374E+04	.657E+04	.308E+04	.144E+04	.163E+04	.249E+04	.147E+05	.669E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.367E-01	.131E-02	0.00	0.00	.105E-01	0.00	0.00	0.00	0.00	0.00	0.00	.485E-01
4.60	.757	.249E-01	0.00	.432E-01	.275E-01	0.00	0.00	0.00	0.00	.262E-01	.747E-01	.953
6.58	2.85	.193	.124	.733E-01	.838E-01	.393E-01	0.00	0.00	0.00	0.00	.779	4.14
9.19	3.04	.794	.799E-01	.141	0.00	0.00	.773E-01	0.00	0.00	.891E-01	.703	4.93
13.0	4.27	1.14	1.06	.236	.561	.234	0.00	0.00	.185	0.00	.507	8.19
18.4	4.24	2.55	.764	0.00	.766	.461	.428	0.00	1.14	0.00	1.27	11.6
26.0	3.99	3.95	3.94	1.32	.764	1.35	.931	.955	0.00	2.41	0.00	19.6
36.8	0.00	0.00	3.00	2.34	3.38	1.03	0.00	1.20	1.21	1.19	2.68	16.1
52.0	0.00	0.00	2.33	0.00	0.00	0.00	3.16	0.00	0.00	0.00	2.24	7.74
73.5	0.00	0.00	0.00	6.22	0.00	6.70	0.00	0.00	0.00	0.00	0.00	12.9
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.7	13.7
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	19.2	8.66	11.4	10.4	5.60	9.81	4.60	2.16	2.53	3.72	22.8	100.0

TABLE 58.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-20. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
15.0	0.00	10.5	0.00	0.00	8.76	0.00	0.00	0.00	17.5	468.	528.	
3.25												
359.	95.5	60.5	66.6	124.	20.2	34.2	21.0	30.7	79.7	.971E+04	.106E+05	
4.60												
.150E+04	396.	347.	229.	293.	516.	476.	244.	150.	447.	.305E+05	.351E+05	
6.50												
.205E+04	.125E+04	.116E+04	541.	706.	725.	679.	777.	273.	.189E+04	.541E+05	.642E+05	
9.19												
.200E+04	.384E+04	.227E+04	.157E+04	.136E+04	.177E+04	.206E+04	.179E+04	.182E+04	.451E+04	.757E+05	.907E+05	
13.0												
.187E+04	.657E+04	.434E+04	.332E+04	.414E+04	.401E+04	.336E+04	.375E+04	.566E+04	.162E+05	.116E+06	.171E+06	
18.4												
577.	.806E+04	.573E+04	.654E+04	.802E+04	.119E+05	.553E+04	.572E+04	.131E+05	.270E+05	.179E+06	.271E+06	
26.0												
0.00	.362E+04	.688E+04	.163E+05	.117E+05	.108E+05	.166E+05	.177E+05	.289E+05	.624E+05	.236E+06	.419E+06	
36.8												
0.00	.161E+04	.984E+04	.711E+04	.249E+05	.975E+04	.284E+05	.286E+05	.321E+05	.135E+06	.297E+06	.578E+06	
52.0												
0.00	0.00	.294E+04	.113E+05	.111E+05	.394E+04	.163E+05	.124E+05	.427E+05	.177E+06	.265E+06	.542E+06	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.452E+05	.286E+06	.110E+06	.361E+06	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.308E+05	.382E+05	.682E+05	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
.837E+04	.254E+05	.336E+05	.490E+05	.584E+05	.514E+05	.735E+05	.710E+05	.170E+06	.669E+06	.140E+07	.261E+07	

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
.604E-03	0.00	.402E-03	0.00	0.00	.335E-03	0.00	0.00	0.00	.671E-03	.179E-01	.199E-01	
3.25												
.137E-01	.366E-02	.231E-02	.255E-02	.473E-02	.771E-03	.131E-02	.805E-03	.117E-02	.305E-02	.371	.406	
4.60												
.574E-01	.152E-01	.133E-01	.875E-02	.112E-01	.198E-01	.182E-01	.932E-02	.573E-02	.171E-01	1.17	1.34	
6.50												
.765E-01	.479E-01	.443E-01	.287E-01	.278E-01	.277E-01	.268E-01	.297E-01	.185E-01	.722E-01	2.07	2.46	
9.19												
.765E-01	.147	.867E-01	.600E-01	.521E-01	.679E-01	.707E-01	.687E-01	.695E-01	.173	2.90	3.78	
13.0												
.715E-01	.251	.166	.204	.158	.154	.128	.144	.217	.618	4.43	6.54	
18.4												
.221E-01	.308	.219	.250	.307	.454	.212	.219	.381	1.06	6.83	10.4	
26.0												
0.00	.138	.254	.625	.449	.719	.636	.676	1.11	2.39	9.05	16.1	
36.8												
0.00	.617E-01	.377	.272	.000	.373	1.09	1.09	1.23	5.18	11.4	21.8	
52.0												
0.00	0.00	.113	.434	.426	.151	.624	.476	1.64	6.77	10.1	20.8	
73.5												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.73	7.07	4.22	13.8	
104.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.45	1.15	2.61	
147.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
208.												
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
.320	.974	1.29	1.88	2.24	1.97	2.81	2.72	6.50	25.6	53.7	100.	

TABLE 59.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-20. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	4.72	.106	.101	.558E-01	.558E-01	0.00	0.00	.558E-01	.335E-01	.614E-01	1.08	7.08
4.60	2.08	.210	0.00	.117	0.00	0.00	0.00	0.00	0.00	0.00	1.40	4.61
6.50	4.53	.369	.296	0.00	0.00	0.00	0.00	0.00	0.00	.212	2.09	7.49
9.19	6.64	1.14	0.00	0.00	0.00	.346	.536	0.00	0.00	0.00	1.38	10.0
13.0	6.47	1.95	.966	.547	0.00	0.00	0.00	0.00	0.00	0.00	2.69	12.6
18.4	9.44	7.41	2.58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.4
26.0	8.45	0.00	6.34	0.00	3.42	0.00	0.00	0.00	0.00	0.00	0.00	18.2
36.8	0.00	0.00	9.81	0.00	0.00	0.00	0.00	0.00	4.67	0.00	6.05	20.5
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	43.1	11.2	20.1	.720	3.47	.346	.536	.558E-01	4.71	.274	15.5	100.0

TABLE 60.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-20. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
1.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	19.3	21.0
3.25	301.	14.9	42.1	34.2	0.00	0.00	0.00	0.00	0.00	0.00	79.7	471.
4.60	837.	208.	37.7	29.8	0.00	72.7	40.3	0.00	0.00	0.00	916.	.222E+04
6.50	.117E+04	320.	400.	55.2	0.00	82.4	40.2	0.00	0.00	0.00	794.	.289E+04
9.19	866.	385.	792.	237.	100.	332.	0.00	0.00	0.00	0.00	714.	.343E+04
13.0	320.	523.	751.	190.	434.	0.00	0.00	0.00	211.	191.	370.	.299E+04
18.4	.185E+04	732.	817.	0.00	0.00	0.00	0.00	0.00	0.00	513.	.183E+04	.574E+04
26.0	0.00	0.00	831.	0.00	791.	0.00	0.00	0.00	0.00	.206E+04	0.00	.360E+04
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.211E+04	0.00	.211E+04
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.535E+04	.227E+04	.368E+04	546.	.133E+04	487.	80.5	0.00	211.	.488E+04	.472E+04	.236E+05

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
1.75	.744E-02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.810E-01	.892E-01
3.25	1.28	.632E-01	.178	.145	0.00	0.00	0.00	0.00	0.00	0.00	.338	2.00
4.60	3.55	1.22	.160	.126	0.00	.309	.171	0.00	0.00	0.00	3.89	9.43
6.50	4.98	1.39	1.73	.234	0.00	.350	.205	0.00	0.00	0.00	3.37	12.3
9.19	3.68	1.63	3.36	1.00	.457	1.41	0.00	0.00	0.00	0.00	3.03	14.6
13.0	1.36	2.22	3.19	.887	1.84	0.00	0.00	0.00	.896	.811	1.57	12.7
18.4	7.84	3.11	3.47	0.00	0.00	0.00	0.00	0.00	0.00	2.28	7.76	24.4
26.0	0.00	0.00	3.53	0.00	3.36	0.00	0.00	0.00	0.00	0.74	0.00	15.6
36.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.94	0.00	0.94
52.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	22.7	9.64	15.6	2.32	5.66	2.07	.376	0.00	.896	20.7	20.0	100.0

TABLE 61.

Data for the classification and size distribution of unliberated CHALCOPYRITE locked to ALL OTHER MINERALS in sample HB.MP-21. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

A.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	25.4	9.64	21.0	0.00	0.00	0.00	0.00	0.00	7.01	0.00	391.	454.
4.60	853.	323.	209.	220.	145.	38.5	19.3	33.3	94.6	473.	.813E+04	.185E+05
6.50	.284E+04	.158E+04	.103E+04	649.	777.	415.	328.	81.5	80.6	.128E+04	.212E+05	.294E+05
9.19	.284E+04	.281E+04	.239E+04	.216E+04	.210E+04	.119E+04	697.	.111E+04	590.	.198E+04	.262E+05	.441E+05
13.0	.142E+04	.454E+04	.372E+04	.206E+04	.223E+04	.238E+04	.166E+04	.187E+04	.220E+04	.271E+04	.306E+05	.554E+05
18.4	540.	.305E+04	.477E+04	.345E+04	.379E+04	.543E+04	.244E+04	.284E+04	.355E+04	.537E+04	.236E+05	.588E+05
26.0	472.	.122E+04	.154E+04	.358E+04	.324E+04	.579E+04	.505E+04	.528E+04	.332E+04	.940E+04	.239E+05	.628E+05
36.8	0.00	0.00	748.	.467E+04	.499E+04	.850E+04	0.00	.721E+04	.340E+04	.107E+05	.134E+05	.536E+05
52.0	0.00	0.00	.381E+04	0.00	.211E+04	.184E+04	.144E+04	.179E+04	.597E+04	.184E+05	.141E+05	.414E+05
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	.381E+04	.281E+04	.993E+04	.165E+05
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	.620E+04	.135E+05	.102E+05	.168E+05	.194E+05	.256E+05	.116E+05	.203E+05	.230E+05	.451E+05	.171E+06	.373E+06

B.

	9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0	100.0		
3.25	.681E-02	.258E-02	.564E-02	0.00	0.00	0.00	0.00	0.00	.188E-02	0.00	.105	.122
4.60	.229	.866E-01	.559E-01	.589E-01	.387E-01	.103E-01	.517E-02	.832E-02	.254E-01	.127	2.18	2.83
6.50	.547	.422	.275	.174	.208	.111	.878E-01	.218E-01	.216E-01	.344	5.67	7.88
9.19	.762	.753	.640	.580	.564	.319	.187	.297	.158	.529	7.02	11.8
13.0	.380	1.22	.996	.552	.597	.637	.446	.500	.589	.725	8.21	14.8
18.4	.145	.816	1.28	.924	1.02	1.45	.653	.760	.952	1.44	6.32	15.8
26.0	.127	.327	.414	.960	.869	1.55	1.35	1.41	.885	2.52	6.42	16.8
36.8	0.00	0.00	.201	1.25	1.34	2.28	0.00	1.93	.912	2.86	3.60	14.4
52.0	0.00	0.00	1.82	0.00	.564	.493	.387	.480	1.60	2.78	3.78	11.1
73.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.02	.752	2.66	4.43
104.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	2.20	3.62	4.89	4.50	5.20	6.86	3.12	5.42	6.17	12.1	46.0	100.0

TABLE 62.

Data for the classification and size distribution of unliberated SPHALERITE locked to ALL OTHER MINERALS in sample HB.MP-21. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. Part A presents the raw surface area data, and Part B presents the data in area percent.

9.99	20.0	30.0	40.0	50.0	60.0	70.0	80.0	90.0 - 100.0		
6.52	.579	.518	0.00	0.00	0.00	0.00	.761E-01	.244	0.00	6.26	14.2
3.25											
2.60	.518	.385	0.00	0.00	0.00	0.00	0.00	0.00	.228	5.95	9.61
4.60											
1.35	0.00	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.37	10.9
6.50											
2.86	.883	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.70	10.6
9.19											
1.55	1.51	1.57	0.00	0.00	0.00	0.00	2.76	0.00	0.00	2.44	9.82
13.0											
0.00	0.00	0.00	3.15	0.00	0.00	0.00	0.00	3.21	0.00	9.10	15.5
18.4											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26.0											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.4	14.9	0.00	29.3
36.8											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52.0											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
73.5											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
104.											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
147.											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
208.											
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.7	3.49	4.62	3.15	0.00	0.00	0.00	2.83	17.9	15.1	38.8	100.

TABLE 63.

Data for the classification and size distribution of unliberated GALENA locked to ALL OTHER MINERALS in sample HB.MP-21. These data were used to plot the histograms and 3-D diagrams presented in Appendix C. The top row gives the classification; the bottom row gives the summary data for the classification; the left column gives the sizes; the second column from the right gives the size distribution for free grains; the right column gives the summary size distributions. The raw surface area data were not recorded. Data given in area percent only.